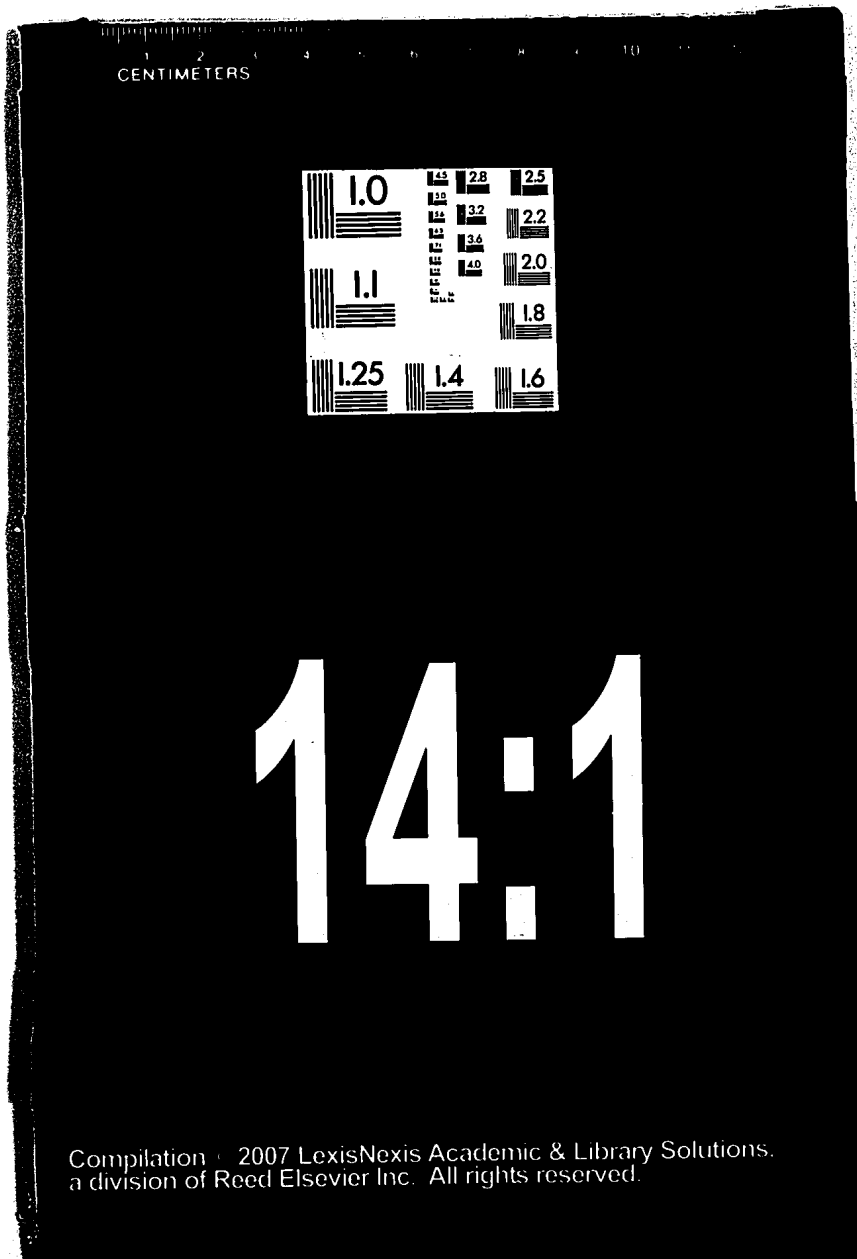

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Thomas A Edison Papers

A SELECTIVE MICROFILM EDITION
PART V
(1911–1919)

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START

228

A Note on the Sources
The pages which have been filmed are the best copies available. Every technical effort possible has been made to ensure legibility.

PUBLICATION AND MICROFILM COPYING RESTRICTIONS

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Notebook Series

Several interrelated sets of technical notes and drawings constitute the Notebook Series. They are as follows: (1) Notebooks by Edison (85 books); (2) Notebooks by Edison and Other Experimenters (69 books in 6 groups); (3) Notebooks by Experimenters Other Than Edison (796 books in 8 groups); (4) Pocket Notebooks (35 books).

Notebooks by Edison. These standard-size notebooks, which generally measure 6 inches in width and 9 inches in length, were used primarily by Edison, but there are occasional notes by other experimenters as well as numerous references to employees who assisted him in his work. The thirty-seven books for 1911-1916 consist primarily of notes and drawings pertaining to the development and manufacture of Blue Amberol and Diamond Disc records. There are also entries regarding storage batteries and chemical experiments. Seventeen notebooks from January 1917-January 1918 relate primarily to research performed for the U.S. Navy during World War I. Much of this work was done in connection with submarine detection. The remaining thirty-one notebooks begin in May 1918, following Edison's return to West Orange from a three-month stay in Key West, Florida. In addition to military-related experiments, there are notes pertaining to salts and solutions for use in primary batteries, the processing of lithium ores, the construction of disc record blanks, and chalk telephone (electromotograph) experiments. All eighty-five books have been selected.

Notebooks by Edison and Other Experimenters. These standard-size notebooks, which generally measure 6 inches in width and 9 inches in length, are arranged into six groups. The entries in the initial notebooks in many of the groups are mainly by Edison, whereas the later books, generated after the pattern of tests had been established, record the work of other experimenters. The first three groups pertain to phonograph records. The notebooks in Group 4 were used during World War I for experimental work for the U.S. Navy and other war-related research conducted under the auspices of Edison. Group 5 contains data on battery cell tests performed at Edison's request, while Group 6 consists of two books of miscellaneous experiments. Among the Edison employees whose work is represented in these books are Walter N. Archer, E. Rowland Dawson, William Deans, William W. Dinwiddie, William A. Hayes, Archiebald D. Hoffman, Absalom M. Kennedy, Sherwood T. (Sam) Moore, Harold H. Smith, George J. Werner, and Henry G. Wolfe. The fifty-six

notebooks with evidence of Edison's involvement or oversight have been selected.

Notebooks by Experimenters Other Than Edison. These standard-size notebooks, which generally measure 6 inches in width and 9 inches in length, are arranged into eight groups. About two-thirds of the books pertain to storage batteries. There are also eighty-two books relating to cylinder and disc records, as well as nineteen containing experiments on Edison's home projecting kinetoscope and kinetophone (motion pictures with sound). In addition, there are thirty-one books that were used during World War I for experimental work for the U.S. Navy and other war-related research; eighty-one books of chemical experiments; and a few books pertaining to electric vehicles and miner's safety lamps. Among the Edison employees whose work is represented in these books are Leroy E. Briggs, Peter C. Christensen, Charles T. Dally, Frank Detlef, Jr., William W. Dinwiddie, Elmer E. Dougherty, Zachariah P. Halpin, John A. Hanley, George E. Hart, William A. Hayes, Charles F. (Frank) Hunter, Miller Reese Hutchison, Absalom M. Kennedy, Ludwig F. (Louis) Ott, and Selden G. Warner. Sixty-four books, which have indications of oversight or involvement by Edison, have been selected.

Pocket Notebooks. These standard-size notebooks, which generally measure 4½ inches in width and 6 inches in length, were used by Edison to record ideas about business matters, experiments to be tried, and other tasks to be performed. The books relate to a variety of topics, including primary and storage batteries, disc and cylinder records, cement, and motion pictures. Thirteen books for 1916-1918 pertain primarily to submarine detection experiments and other research performed for the U.S. Navy during World War I. In addition to technical notes and drawings, there are notes about inventions to be patented, songs and recording artists, phonograph and record sales, advertising ideas, legal and patent matters, costs and salaries, and personnel issues.

Archival Identification Numbers for Notebooks

Over the years, several numbering systems have been employed by archivists to identify the notebooks used in the West Orange laboratory. Because these numbers frequently appear in published citations and in archival finding aids, they are included on the targets (editorial descriptions) in the Notebook Series.

N-numbers. During the late 1930s archivists at the West Orange laboratory began assigning six-digit numbers, prefixed by the letter "N," to Edison's laboratory notebooks. Frequently this number corresponds to the first dated entry in the book. For example, a book whose first dated entry is from July 28, 1912, carries the number, N-12-07-28. Books with the same N-number are distinguished by an extension number (for example, N-12-04-15.1 and N-12-04-15.2).

N-numbers are not reliable indicators of the date on which a notebook was put into use. Some books were used for a long period before an entry was dated. Numerous other books contain no dated entries. Some of these undated books are indicated by the notation, "N-Undated," followed by an extension number. For example, N-Undated.4 is a notebook that was probably used in 1916. For other undated books, a conjectured year serves as the first two digits of the N-number. For example, N-11-00-00.4 indicates one of four notebooks believed to date from the year 1911. Subsequent research has revealed that many of these conjectured years are inaccurate.

PN-numbers. As with the N-numbered notebooks, the six-digit number frequently corresponds to the first dated entry in the book. Undated books are designated either by the notation "PN-Undated" or by a conjectured year. Many of these conjectured years are inaccurate.

NOTEBOOK SERIES
NOTEBOOKS BY EDISON

Notebook Series -- Notebooks by Edison

The eighty-five notebooks in this subseries cover the period June 1911-December 1920. In addition to seventy books with dated entries, there are fifteen undated books that were probably also generated during this period. The thirty-seven books for 1911-1916 consist primarily of notes and drawings pertaining to the development and manufacture of Blue Amberol and Diamond Disc records. Included are references to recording experiments involving various recorders, horns, and studio furnishings, as well as experiments with the electroplating, molding, pressing, and transfer processes involved in disc record manufacture. Some of the books from this period relate to storage battery experiments such as the rejuvenation of old positive electrode tubes and other battery components. There are several notebooks from 1915 pertaining to chemical experiments, including notes regarding the construction of benzol absorbing plants and methods of obtaining phenol. Some of the books were used by Edison in his laboratory at Seminole Lodge, his winter home in Fort Myers, Florida.

The seventeen notebooks from January 1917-January 1918 relate primarily to research performed for the U.S. Navy during World War I. Much of this work was done in connection with submarine detection. Included are numerous experiments on the recording, amplification, and measurement of sound. There are also notes on other war-related topics such as rangefinders, camouflaging techniques, methods for positioning guns in trenches, and methods of generating smoke and fog for use by merchant ships at sea. Some of the experiments were performed at Sandy Hook, New Jersey, while others were conducted aboard the USS *Sachem* in Long Island Sound. A few books contain information from Naval intelligence reports and other material copied from published sources.

The remaining thirty-one notebooks begin in May 1918, following Edison's return to West Orange from a three-month stay in Key West, Florida. Many of the entries in the books from the summer and fall of 1918 were made in the garage at Glenmont, Edison's home in Llewellyn Park, where he continued to work on sound detection experiments for the U.S. Navy. There are also notes pertaining to salts and solutions for use in primary batteries, the processing of lithium ores, the construction of disc record blanks, and chalk telephone (electromotograph) experiments. The books for 1919 and 1920 continue the lithium processing, chalk telephone, and disc record

experiments begun in 1918. There are also notes on the development of a starting storage battery for Ford automobiles. The entries for these later books reveal the convergence of Edison's work on battery and disc record manufacture in terms of electroplating.

In addition to the experimental notes, there are a few books with entries of a more theoretical character. For example, N-22-00-00.1, with dated experimental entries covering the period July-September 1917, also contains undated speculations by Edison in regard to ether, light and optics, astronomy, electricity, electromagnetism, gravitation energy, and other topics. There are also occasional references to Edison's longstanding interest in "xyz rays."

Most of the entries in these books are by Edison, but there are occasional notes by other experimenters, as well as numerous references to employees who assisted Edison in his work. Among the experimenters mentioned are Jonas W. Aylsworth, James M. Burns, Peter C. Christensen, Charles T. Dally, Harry R. Grimes, John A. Hanley, William A. Hayes, Archiebald D. Hoffman, Miller Reese Hutchison, Sherwood T. (Sam) Moore, Frederick P. Ott, and Ludwig F. (Louis) Ott.

All of the books have been selected.

Notebook Series -- Notebooks by Edison
Notebook, N-11-06-07.1

This notebook was used by Edison during June 1911 and January-May 1913. The entries from 1911 primarily involve the regeneration of old positive electrode tubes from Edison storage batteries. Included are lists of individually numbered tubes soaked in various chemical solutions, with the appearance of the tubes and solutions indicated. The entries from 1913 primarily involve the composition and manufacture of phonograph records. Included are formulas for "blueing" blue amberol records and for "grafiting" submaster records. There are also notes on tests of several hundred numbered preparations of Condensite varnishes, followed by a discussion of a series of "grafiting" and "silvering" experiments aimed at better electrolytic deposits in the record manufacturing process. Toward the back of the book is an undated group of entries, probably from 1913, describing experiments with different preparations of wax to be used in making the submasters. The front cover is labeled "Condensite," with "Regeneration Battery" crossed out. The pages are unnumbered. Approximately 160 pages have been used.

7th June 1911

Expts on respouncding acid Lutes by different Chemicals & allowed to nearly 20 in the Cold by soaking —

The Tubes grew in water several days & water changed —

12 20 am — 9th —

920 in Ammonium Phosphate
10th Jun 10 am — Solution clear
put tube in Water

891 Lode de K only gum 1
quantity 90 1. 1 & 3 grades
10th — 10 am — 1/2" Red 7/2 Hg separated bottom
tube coated only at Sp the where 7/2
Exposed, ends etc, & Chamas brought —

1705 m Hyposulphite Potash
10ctt = 1/2" black ppt - only
from ends where 7z exposed -

1

1703 Chloride of Potash -
1/4" sediment blueish, tube clear

525 Cyanide Mercury
1/4 Red sediment Tube clear

892 Tungstate of Potash
Sol clear Tube clear
no sediment

1702 Chromate Potash
Sol Clear - no sediment - tube clear

905 Ammonium Chloride
Strong but not salt, - little red sed
Sol blue or green. some red stuff colors
iron Exposed at ends. tube
tube clear

902 Sulphate Ammonia
1/4 Red Fe_2O_3 — Sat blue or green
tube clear except 1/2 at top —
Bacteria at top and tube

527 Ammona Citrate
Sat green rather strong —
tube perfectly clear — no
action at end —

903 Benzoate Potash
Sat clear no ppt —
no action, tube + end clear

919 Sulphate Zinc
not sat but strong —
Tubes bright - Sol clear slight
color tinge, a little black residue
on tube | wipes off - This is a
strange result. — no residue at end

1704 Ferrocyanide Potash
No sediment, Sol clear
scarcely any residue at Ends
tube yellowish tinge —

901 Molybdate Potash
Sol clear tube bright scarcely
any residue at Ends —

526. Nitrate Potash
Sol clear, trace sediment
ppt at bottom tube clear
scarcely any action at
end

906 Nitrite Sodium –
Sol'n Tube Clear, bright
no action at end

1706 Cobalt Sulphate
Everything Coated black
tube of some no sediment.

1707 Chlorate Potash

1 inch Red spreading -
Lubra bright except Sides colour
very great action brain going
on

904 Zinc Chloride

not sat but strong

Sal Ccccr, no action at first
tube bright,

All previous tests dull on
Solution 1730 dull June 8 1911

Experiment soaking green in a Cobalt solution $CoSO_3$ 7 aq ~~then dry~~ then in KOH, to precip. $Co(OH)_2$ in pores in Vacuum Chamber, + then ~~dry~~ percolate + dry

75 grms green is wet by 35 CC of solution (H_2O) +

In 35 CC sol put 2 grms $CoSO_4$

3 5 7 10 15 20

25 ~~30~~ & 35 grms always with 75 grms $NaSO_4$

poured all the $CoSO_4$ out that could put MnO_2 in beaker first poured KOH 21% over it let it soak 1/2 hour then made several decantations, + left wash night in water -

Regeneration tube, June 26 1911
Reduced 2 days hot in glycerin then put in

3968 – 220 cc glycerin 10 grams
Mercuric Chloride, soaked last
plate 2 days in pure glycerin
1½ days then in water
24 hours —

3969 – same with 10 grams
Potassium Iodide

2565 — 10 grms KCy

6120. 10 grms. Benzaldehyde

8807 10 grms HgCy —

8808 10 gms K Nitrite

5368 10 gms K Bromide —

All proceeding in 220 cc glycerin + methanol Lehr 3968 —— took out + soaked 1 day in pure glycerin then ~~—~~ 2 days in water — then on test —

11:30 am Saturday

Lot old Tubes soaked for several days in glycerine then soaked 24 hours in water then all 7 of them put in Conc glycerine Containing 10 gms HgCl to each long Cane — HgCl only 2/3 dissolved put the Extra Capillaries in & Set on board on hot plate

Got numbers Monday & Wash in water —

No 12

Formula for Graphite sedimentation

2 qr Crimson Lake
2 " Utah Gilsonite
6 " Mandan Crude -
10 " Dixon's 09 graphite amorphous natural

No 13

2 qr Crimson Lake
2 " Gilsonite
6 " Mandan
10 " Graphite
3 " Yellow high grade Resinous

Basil

Formula for Blueing Anilerals

60 parts Denatured Alcohol
40 " Water
10 " Acetone
2 " Methyl Blue BB (Heller & Merz)

bring up to 140 deg Fahr + stir well, then cool down all night in cold place 60 degrees about then filter through fine grain Swedish filter paper two thickness,

Deep blue dip 20 minutes
Proper blue " 10 "
Light blue 15 seconds

No Camphor comes out original surface not altered, dries in 2 or 3 hours -

Wipe with dry cloth before dipping to remove grease

Hellen + Mertz

Methyl Blue BB, with 1/3rd
wash 2/3 Dz Nat alcohol
Dyes cellulose Linen a good
blue — 3 hours soak warm
+ absolutely leaves surface
unchanged — dont absorb
cut Cremplar take no time
to season about 5@8%
Acetone deepens Color + dont
dissolve Cremplon ~~for~~ or change
or ~~pigment~~ surface Color ~~is~~ Subsequent

+ Tested

⊕ good.

⊕⊕ Very good

⊕D good but a doubt

Jany 29 1913

Experimenting with Condensite
Varnish ~~SS~~ with various
substances to get quick surface
No run as with 4% high yield of
Tannefers —

⊕ XO 354 — 5% Common Rosolic (good acid)
+ 355 10% " "
+ 356 - 5% Duracinic acid
357 " Phenanthrene
+ 358 Beta Naphtol
+ 359 Resorcin
+ 360 Phenacetin
⊕ 361 Perchlorobenzol 50% Sol D Nat
+ 362 Monomethylparaamidophenol 1/5% Sol
⊕D 363 Benznaphtol.
⊕⊕ 365 Para Toluolsulphochloride — (Good)
+ 366 Di Oxynaphthalene
+ 367 Paraamidophenol.
⊕D 368 Metatolylendiamine
⊕D 369 Paradichlorophenol
⊕⊕ 364 Alpha Naphtol
⊕ 370 Parachlortoluidin 5% 61 gm

All 5%

371 – Paraphenylendiamine PHENOMENON
Varnish go to a jelly in 4 hours at ord temp –

+ 372 Betanaphthramine 91% sol
+ 373 Metaphenylenediamine 90% sol
+ 374 1% NaOH.
+ 375 2% "
+ 376 3% "
+ 377 5% "
+ 378 10% " – .

+ 379 Anthracene – none sol –
+ 380 Benzonaphthol 50% sol
⊕ 381 Phthalic acid
⊕⊕ 382 Acetanilid
+ 383 Salicylic acid 1 gm
+ 384 Rag Van 3 4 f Mixed in mixer 10 min as long as filtered there 3 Reactions

⊕⊕ 385 – Chloride Ammon 38% sol
+ 386 Naphthalene Hydrochloride 5% sol
+ 387 Benzoate of Potassium 55% sol

+ 388 Creosylic acid
389 Phenanthrene 85% sol
+ 390 Oleic acid
+ 391 Lactic acid
+ 392 Lead acetate 95% sol
+ 393 Diphenylamine
394 Chloral hydrate
+ 395 Hexachlorethane
396 Citric acid 87% sol
397 Naphthalene
+ 398 Tartaric acid Nearly sol
⊕⊕ 399 Gum Damar 55% sol
+ 400 " Kauri
401 Com Rosin –
+ 402 Stearine Pitch not sol
+ 403 Water 2%
+ 404 " 5%
+ 405 10%
+ 406 20%
407 6/4 9/10 of mercaptan
+ 408 8/10
+ 409 7/10
410 6/2
411 4/10
412 3/10
413 2/10 -

+ 414 Paraformaldehyde 7.9 grams —
⊕⊕ 415 Para Phenylenediamine Boracic 2%
+ 416 Acetate Ammonium
+ 417 Boric acid pure technical
+ 418 Manganous Chloride gut. sol. in 135 grams
used only 6%
+ 419 Acetate Magnesia
+ 420 Rosalic Acid 4%
+ 421 " 3½%
+ 422 3%
+ 423 2.5%
⊕ 424 2%
425 Hydroquinone 73% sol
426 Acid Picric 50% sol
+ 427 Acid Paraoxybenzoic
428 Anhydr Santonic Acid 85%
+ 429 Copper Chl 26% more if more put in
+ 430 Gum Gamboge 50% 5% ammo
431 Manilla Copal
+ 432 Acid Picric Oxyphenyl
433 Quinone
+ 434 Gamboge 35% sol 10% ammo
+ 435 47% 20% "
⊕⊕ 436 Salicylic Acid try
437 Naples Yellow 50% sol
⊕ 438 Rhodamine 6X
⊕ 439 Safranine Base 61%
440 Phenolphthalein 28% sol

442 Anthrene base 10% sol
443 Bromo J
444 " 4A
445 Anthrimide 00B Conc
446 Acid Violet 4BNS Conc 65% Try
447 Violet Base 70%
448 Methyl Violet 3PB 65
449 Violet 6 B Crystal
450 Victoria blue base 29%
451 Spirit Blue 65%
452 Methyl blue BB 3½%
453 Aekeki Blue 66%
454 Victoria blue B 63%
455 Aekeki Blue BR 46%
456 Enaglamine 46
457 Green III 46
458 Acid Green GLX 8% Try
459 " " BB 8%
460 Green base 1107 55%
461 Shellac 91% 5% used
462 " 10 10 "
463 25 25 "
464 50 50 "
465 Acetanilid 8%
466 " 12%
467 " 3%

468 alpha Naphtol 3%
469 " 8%
470 " 12%
471 Paratoluolsulphochloride 3%
472 " 8% — never got clear
473 Parachloraniline 3%
474 8%
475 12%
476 Amorphous graphite treatment 5%
477 " 10%
478 " 15%
479 Strontium Carb 5%
480 10%
481 15%
482 Lacmoid 5%
483 10%
484 15%
485 Gum Damma 3% 80% ppt
486 8 63 "
487 12 53 "
488 S
489 Salicylic acid 3%
490 8% } ng
491 12% }
492 Phthalic acid 3%
493 8% } ng
494 12% }
495 2

496 Anilin Oil 4% } ng
497 6% }
498 Acetanilide 3%
499 5%
500 8%
501 12%
502 Acid Green GCX 3% 83% ppt
503 8 12% ppt
504 Alkali Blue BR 3%
505 8%
506 Parachloroaniline 5%
507 " 10%
508 Graphite 097 10%
509 25%
510 50%
511 Chloride Ammonium 30 grms
512 " Max 30 grms
513 "
514 "
515 Paraphenylenediamine 3% went off in 18 hours
516 Phthalic acid 5%
517 8%
518 " + one percent Paraphenylenediamine
519 Gum Damma 5%
520 Parachloraniline 5% Paraphenylenediamine 2%
521 Reg Picric 4% & 2% Paraphenylenediamine

522 Rosolic acid 4% + 2% Para P.D.
523 Phthalic a 4% " + 2% "
524 Celplex Naphtol 4% & 2% "
525 Acetanilide 4% + 2% "
526 Diphenylamine 4% + 2% "
527 Acetate Magnesia " " "
528 Hexachloroethan " " "
529 Salicylic acid " " "
530 Safranine base 3% + 2% "
531 Acid violet 4 B N S Conc 3% + " "
532 Tromo J 4% " "
533 Paratoluenesulfochloride 4% + "
534 ———
535 Tron Rem 142 MP 29% Amphenol 54 Penta 48 Napp + 95 G/4 1780 cc
536 75% 097 graphite "
537 Equal parts "
538 Gum Damar + 2% Paraphenylene base "
539 100% graphite + " "
540 5% Chl Ammon + 2% "
541 75% Carb Strontia + 2% "

351 — Runs out NG

348 — Runs out NG

354 — 5% Rosolic acid used in Varnish instead of Penta see on 314/
50 plates — 16 Transfers made
15 blisters up on Oven
4 tested — No run outs velvety surface
Works fine on press — good results
2 pull outs near halftone but OK 2 stuck To plate but came off when warmed with hand —

900 □

355 10% Rosolic acid
50 plates · 2 left ups in oven
48 transfer plates · 24 transfers
14 OK 2 2nds ok Consd —
2 w/dent t & Consd —
1 Streak to plate Van peeled off manhole
1 Van peeled off
1 Smear cent
1 Van dedent f Conv wall manhole
5 decanters 3 with slight
Cut 1 Crack in Van
1 peeled & cked
good Crack
5 leaked 1 Run out dent
Think its no good as 5% 254

356 - 5% Quaenic acid

44 plates - 6 left in oven
19 Transfers made 8 OK four 1 2nd
10 Discards 6 Reverse [illegible]
1 bad then [illegible]

357 — [illegible]

358 5% [illegible] — 50 plates —
8 Left in oven —
20 Transfers made 8 OK [illegible]
11 Discards
6 Reverse 1st time [illegible] 2nd time
all then wet 2 dry, 1 [illegible]

359 5% Resorcin – none sat.
Last most transfers – 5 tested
all remained – 44 plates [illegible] transfers
10 Records – Bad Reactions

360 5% Phenacetin [illegible] last most of
them – all records remained

361 5% Pyrabi[illegible] no precipitate
43 plates 21 transfers 1% ppt GOOD
1 2nd Staphylococcus 3 Records
all have been tested and [illegible]
transferred – quite [illegible]
5 Records 2 OK 3 slight reaction

362 Mono methylene amidophenol 5%
75% Sat – 36 plates [illegible] transfers
16 ppt 1 2nd Staphylococcus [illegible]
Streak tested out 1 [illegible]
5 Records 3 strong reactions
1 slight "
1 OK

363 5% Benzmaphtol –
52 plates – 26 transfers
17 OK 2 2nds smear spots on 6
to plates. 7 Rescreen stock to
plate – w obscure – 14 blanks stock
to plate of work OK 7 rescreen by
10 Legend from plates 4 legends
strongly to get off = good legends
5 Reorders 4 OK 1 very slight smear

364 Alpha Naphtol –
45 plates 22 transfers
20 OK 1 2nd 1 Rescreen
6 stock to plate not enough ink
Except 1 which is a Reorder
Van looks good – good legends
5 Reorders
2 OK
2 Slight smear
1 Very slight smear

GOOD

365 5% Paratoluolsulphochloride -
48 plates 24 hrs exposure
22 OK 1 2nd 1 Discard
Streak to plates only spread
Thin Uneven coverage otherwise. Clean
any other movement Un-plated
had some bubbles which may
show later -
5 Records 4 OK 1 Extremely
faint run out

GOOD -

366 5% Dioxynaphthalene
48 plates 22 hrs exposure 1 Top
1 2nd 6 Discard 1 Streak To
plate, 6 spread 2 clear plates
Remaining 4 spread Some off
Road coke good
5 Records 4 slight mount 1 OK

367 5% Paraamidophenol.
45 plates 22 bacteria
2 OR 20 bacteria Van pulled up
2 very plates broke & had to be
forced off —
1 Recorded 1 OR.

368 5% Methylphenylenediamine
48 plates 24 bacteria
20 OR 1 2nd Organism 3 Doubtful
pulled air organisms plates
Van 1 OR no good —
5 Records, 1 Single RO
2 Very Slight RO
1 OR
1 Run Out

GOOD

369 5ᵗʰ Paradichlorphenol
43 plates 18 OR
3 decanted, 1 Cl edge - 1 small
piece on pucc & out, 1 Rem sketch
plate — coke very small
5 Recorded 3 very slight Rem
1 OR 1 Rem cut

370 5ᵗʰ Paradichlorophenol
48 plates 2ⁿᵈ Impression 20 OR —
1 2ⁿᵈ 3 Discarded 2 Cl edge
Duplicate scan of 5ᵗʰ 1 Rem sketch
coke coat a few pin pricks
5 Recorded 3 Very slight Rem cut
2 OR —
Totally good Discarded —

GOOD

371 -

372 5% Betanaphthylamine 91% dia
28 plates 14 Transfers
9 OK 1 2nd 4 Discards –
1 Van pulled off 3 Van Called
+ Crack – good confirmation only
four 5 Records
1 Slight run out
4 Run out

373 5% Meta Phenylendiamine 90% Dichr
25 plates 12 Transfers
4 OK 1 2nd 7 Discards –
Van pooled off from Salgas – Van
called – from – no Van Discrepancy
Good 2 Records OK Recalibrate

375 2% Na Cl.
28 plates 14 Transfers –
2 OK 12 Discards –
Discards as Van pooled off
at Salgas off Crank – Van across
Thin + down Weak + Pressure
Crank 1 Records OK

374 10% NaOH.

24 plates 12 Inactivated
6 OK 6 Discards
4 stuck to plate, 2 lifted —
Crap - poor working Vac

4 Rec 1 OK
2 Runout
1 Slight Runout

390 5% Oleic acid —

Dont stick To Hemocue Cover Plate
at acc - 2 or 3 some right
Veneer whole, Inact cracked —
Found drop Oleic on Record
Duplicate - no —

378 - 10% NaOH.
Easy scale & Cook.
Dont condense, scratch
Condensate. Spray with
temper resist — 2 lbs —

Dissolve & mix Alkali reagent
by heat for use in Indicator
Strip Paper — Hellige Comp

67c Alkali 3R — Synthetic soften
Med high temp

Cellon Blue 2GL for Rayon
soften -

Alkali Solid O 1 Very Stable
excellent soften temp

75c lb

Methyl Blue BB smoker 60 Cents
Confederate Daftens high temp

Victoria Blue smoker
Daftens Easy – 37 Cents

Patent Blue A Cone smoker
Confederate Daftens high
temp

Victoria Blue Brown – Melts to
a Liquid Easy – Very Little
residue – 75 cents

Blue B Meerschaum Clay –
Confederate Smoker – 65 Cents
Daftens high temp

Chrysoidin R Brown 70 C
Melts Easy Daftens

Phneo Brown E T Dont Melt

Chin Yellow W Cone Dont melt

Nanking Yellow P Melts high temp 75c

Auramine OOB Conc Melts very high temp 51c

1,15 Auramine O Base Yellow powder Melts, easy to liquify

Resorcin Brown ZX Dont melt.

Chrysoidine Y Dk orange powder Mg-

28c " R Melts very thick liquid

Bismarck Brown 2R Light dk orange powder

Phosphine Indo - Melts very high — 50c

Croc Scarlet 1100 Dont Melt.

Fuchsine - Base Melts fairly easy to liquid 1.00

Violet 6 B Crystal Cakes high temp, Smoke 1.68

55c Acid Violet 4 BM 1 Cof Cakes very high Temp

72c Violet Base - Melts easy to liquify

38c Methyl Violet 3 BS - Melts to a thick liquid

Croc Orange C 25 4 Dont melt

90c Rhodamine BX. Melts [illegible] smoke

56.00 Fuchsine RT Cakes high temp some smoke

Acid Magenta - Dont melt

1.35 Safranine B Base Cakes [illegible]

Very high temp [illegible]

Cakes " 55

35 Green M Melts Very [illegible]

40 Acid Green BB Cakes high temp

45c " I " CGX "

Green R Melts moderate temp Lots smoke

Acid Green [illegible]

Grecutt Base-yellow powder
Easy to grind — 82c

Orange Y Melts too high-Smoke
Safranine GFFX. Dont melt
Rhodamine Base, Melts
Easy to Grind — 1.50

70 Brown 4 A
120 Rhoda mine [illegible] melts too high temp
to think
65 Brown [illegible]
high temp

Aqueous Cake high temp
67c Alkali [illegible]
Methyl
Cotton Blue
Alkali Blue
75c [illegible]

380 – 30 placed 15 Traces
8 OK 3 2nds 4 Discards
Van lifted up + marked 3 pencil dots
at Edges
5 Records 2 Rum Ocet
3 Slight runs

383 – Stuff not clear –
24 placed 13 Traces 4 OK
8 Discards
Records not checked

385 24 placed 13 Traces
13 OK – work well with evidence
fine Evidence of contrapposto
some of the [illegible]

GOOD

379 – 29 placed
5 OK
all have van curled on around 8 1/4
No Stuff discarded
Records not checked

375 28 places 14 Trans
2 OK 12 Duplicates
NaOH 11g

381 — 30 places 15 Trans Phthalic acid
14 OK 1 2nd smallest amt —
A1 — 5 Records
1 Very slight
GOOD 2 OK
1 Trans not complete
Not Check 1 Runout not found

382 30 places 15 Trans
13 OK 2 Duplicated — Vane
Smeared at Edge — 10 Records
all transparent some places
a little white and clear
5 Records 5 OK
GOOD VERY - Acetanilid

393 - 27 placed 13 Trees 11 OK 2 demands
These are A1 - in every way except small cracks
a piece pulled or chipped out round
Edges Thro Van shows up very well
Excellent appearing surfaces, black
free from splash of smoke - no checks
or cracks - Wants to buy more
5 Traced - 2 OK - 1 very slight Run out
2 Run outs. 1 Not good Varnish -

387 24 placed 12 Trees 10 OK
1 Discard 1 2nd -
Van peeled off, small cracks
Otherwise Freely 5 Records
5 Run Outs

286 - 29 placed 14 Trees
5 OK 2 2nd small grooves side thin
7 Discards - Coat of Gum Freely
all came off freely
4 Records 2 OK 1 Little run out
1 Bad run out

399 - 24 placed 12 Trees
9 OK 3 2nds small cracks
Checks appear - No records
Looks good don't check to placer
or Crack at Edges
5 Records 3 OK 1 Slight run out
1 Run out Crack —
Pretty good Varnish —

395 27 placed 13 Trees
11 OK 1 2nd - Van checked place in
small spaces Good work - Checks
freely from placer All coming out
very slight Crack seen - Looks small
good appearing
1 Bad run out
1 Run out
1 Slight run out small spaces not records
1 " Cracks freely from
1 OK
Not good Van

13 11
84
152
104

400 – 24 plates 12 Trams
6 OK 2 2nds Cracked & peeled off (with pinch mark) 4 Descands
1 peeled – faces scratched works good
air spots show up after
cleaning ACC reject –
Sealed 3/Records 3 Remarks
NG

405 24 plates 12 Trams
4 OK 8 Descands Dust flecks
smooth 7 Van pick ups
poor coke stuck slightly to
plates – NG –
Bottom dirt surface not
very good – Records apply

404 – 24 plates 12 Trams
OK 3 2nds 3 Descands
6 – NG

403 – 24 plates 12 Trams
OK 4 2nds 7 Descands
1 air spots after cleaning
ACC reject Show up –
works well face scratches
NG

416 – 24 plates 12 Trams
5 OK 1 2nd 6 Descands
3 Cracks 2 Van peeled 1 pick up
NG

420 24 plates 12 Trams
6 OK 3 2nds 3 Descands
face scratches, surface electrolyte sweaty
2 OK
1 Slight run out
2 Bad run out
Very shiny surface, black-

392 = 24 plates 12 Trans
2 OK 10 Discards
5 Cracked at Edge pieces peeled off
5 Van Slick to plates, no reinforced
pieces NG

391 = 24P 12 Trans 4 OK 8 Discards
all slick to plate + no reinforced off
4 have small pieces pulled out
2 Van peeled off - 2 dark flow to a
good surface - Vermin scratches
throughout - NG

405 24P 12 Trans
4 OK 8 Discards 1 Van slight
flow smooth 7 Van pickup -
poor color slicks slightly Co
plates NG

415 24 Plates 12 Transfers
12 OK - No discards this Van
looks fine - good appearing surfaces
free release - A1 -
5 Records
1 Bad run out
Paraphenylenediamine 2 OK velvet
Versene 2% 1 Slight run out velvet
1 " not velvet
This is the blackest + most shimmering disc
we ever had its like jet black shellac
plastics + has a very attractive
appearance - GOOD

419 - 24P 12 Trans
1 Disc scratched Van peeled
These Discs Beautiful Yellow.
Very Even, shiny + Attractive -
5 Records 3 Slight run out surfaces only fair
2 Bad run outs

378 – Every plate blistered in oven
NG –

422 – 24 plates 12 Trans 3½% Rosalie
9 OK 3 Duscards
1 Van pickup 1 Van Ck 1 peeled off
Lakes very well – free release A1 –
4 Records 2 OK 1 Bad run out
1 faint Run out.
Transfer blanks 7 good 1 2nd pull out
4 Duscards Ckd at Edge

423 24 plates 12 Trans 2.5% Rosalie 7 OK
2 2nds 1 pickup 1 Ck –
3 Duscards – 2 Van peeled 1 Ck
free release, Lakes well.

Transfer Blanks 4 OK 4 Duscards
1 Ckd 1 dust mark from 1 Ck
1 slight [illegible] 5 Records – 1 Run out at Edge at inside
2 very faint run outs. 2 OK

424 – 24 plates 12 Trans 2½% Rosalie –
9 OK 2 2nds 1 spot 1 Ck – 1 Duscard
Van peeled off – Lakes fine – quick opening
free release A1 –
5 Records 4 OK 1 faint run out.

Transfer Blanks 6 OK 3 pull outs
3 Cracked Edges –
Transfer plates 24 OK 1 Duscard
raised – 5 Records –

421 – 24 plates 12 Trans 3.5% Rosalie
9 OK 2 2nds Variations
1 Duscard Surface slightly
Smoky – Lakes well – free
release A1 – 3 OK faintest kind of
a run out, Very Black & Shiny
Surfaces

8/10 6/4

408 — 24 plates, 12 Trans
30 OK 2nd 1 Discards 5
6 pick ups 1 Crack 2 peeled 66
Ledut Leal NG

406 — 24 plates, 12 Trans
8 OK 1 2nd — 5 Discards
1 peeled 1 Chuck, 1 Cracked
free release
Transfer 4 OK 4 Discards
5 Records 1 OK 4 Very slight
Remnant — Usable — good
Reinforced

427 — 12 Trans. Paraoxybenzoic acid
6 OK 1 2nd 5 Discards
No test NG

7/10 6/4

409 — 12 Trans
7 OK 1 2nd 4 Discards
Ledut test NG

414 — NG — in oven

358 NG "

438 12 Trans 9 OK 1 2nd 2 Discards
1 Crack 1 peeled — looks very good —
free release,
Transfer Cards 8 OK 1 2nd 3
Discards, oven-look good
5 Records 3 faint run out Cancelled
1 Very faint remnant, decent
1 Run Out

434 — NG from oven
417 " "
430 " "
435 " "
429 "

432 12 Trans
6 OK 6 Discards NG

436 – 12 Trans 10 OK 2 2nd
no discards Looks fine good surface
free release, few air spots
Trans 6 OK – 1 2nd 3 Discards –

Records 1 Runout Not Good
3 OK 1 Surface Runout
Velvet surface – GOOD
Salvage the record

439 12 Trans 11 OK 1 Dis (Warped)
Excellent, Looks good fine black
surface, free release A 1
5 Records 3 Slight runout not velvet
2 OK
Transfer Blanks 6 OK 1 Only 5
Cracked
Plates 5 Discards Bubbles –

442 12 Trans 7 OK 2 2nds
Cracks — 3 Discards Cracked &
Packed wax around Edge
Work fairly well except for
Cracks

Transfer Blanks OK 2 Discards 10
Cracks

2 Records OK velvet

433 12 Trans 4 OK 1 2nd 2 chimes
7 Discards (2 cracked 5 packed
5 Stuck to plate forced
off all Records
Not Loaded

437 12 Trans 8 OK 1 2nd Couch
3 Discards (1 check 1 pack 1 air spot
free release work good — plates
bad with bubbles
Discards 6 — Bubbles Transfers
Covered with bubbles
5 Records 1 Slight RO Surface Cuts
1 " Velvet "
2 OK Velvet don't Cut
1 OK Cuts little
probably films on dirty plates

440 — 12 Trans 10 OK 1 2nd 1 Discard
Work very good, excellent appearance
free release, Van had a number of
air bubbles these show plainly

Transfer Blanks None OK air
bubbles — Discards 3 —
5 Rec 1 Run out, cuts
1 OK velvet
2 Run outs don't cut
1 slight run out

VARY

443 — Bromo J. 12 Trans 10 OK
2 2nds (1 check 1 Crack)
Excellent — Lifter very good, good appearance
free release A-1

Transfer Blanks — OK 8 Discards 4

Oven — plates Look good

Plates 24 OK 5 Discard

5 Records 2 Slight Run out
2 Run Out
1 OK

441 - Fuchsine RT 12 Trans 10 OK
2 Ducands (1 cracked 1 check)
Excellent colg, had some small bubbles
but they scarcely show, good surface
in appearance, free release
A-1

Transfers - Not OK, bubbles, Ducands
Cracked, dirt on surfaces

Oven - Bad air bubbles

Plates, Bad air bubbles
Ducands ravaged 4 bubbles &
5 Records 3 slight run count
2 OK

465 8% Acelaurine 12 Transfers
6 OK 1 2nd (air spot)
5 Ducands - peeled - Colg good

Transfers 6 OK 6 Ducands
pull outs -
Oven (looks good)

Plates 24 6 left over
6 Records 5 OK 1 Run out

466 12% Acelaurine - 12 Transfers
4 OK 8 Ducands 5 peeled 2 cracked
5 stick to plate forced off & cover
ducands

Transfers 4 OK 7 Ducands
pull outs -
Oven packmarked)

plates several bubbles on all
plates + thin press

Not Tested NG

452 12 Discs 4 OK 2 2nds
6 Discards not tested NG

451 12 Discs – 6 OK 2 2nds 4 Discard
Not tested NG

467 12 Discs 3 OK 9 Discards worked
very good 5 stuck to plate Vermark
peels off Not tested NG

466 12 Disc 4 OK 8 Discards 5 Vam
peeled 2 cracked – This Vermark
works good although 5 plates
stuck due to Lacquer Cannon
Transferring, good appearing
surface The 5 stuck to plate also
forced off two 2 discards
Not Tested

444 12 Disc 9 OK 2 2nds 1 Cancel
1 Discard Cracked Oven – very
good Transfer 6 OK 1 2nd (Cracked)
1 Scratch 4 Discards
4 OK Velvet Except 1 + Chad mutilated
1 Very Slight run out

GOOD

448 12 Discs 5 OK 1 2nd 6
Discards NG Not tested

449 12 Discs 4 OK 3 2nds 5 Discards
NG not tested

450 12 Disc 6 OK 1 2nd 5 Discards
NG not tested

446 12 Discs 8 OK 4 Discards (3 Cracked 1 Bad)
Worke good hub ones air pocket but shows
very little after transfer – press release.
Transfer 6 OK 4 Discards air blister
raised on surface 1 2nd 1 pull out.
Oven – looks good – plates –
Quad air bubbles in all 24 plates –
press discards 5 Cracked 1 bubble.
Record 4 OK VERY VELVET
best surface I have heard yet, on a
Cancel 1 Slight run out slight
traces of cutting

VERY GOOD

447 - 12 Discs 8 OK 2 2nds (2 air spots)
2 Discards (Var cracked, Local bubbles)
Works well some air spots
free release
Transfers 4 OK 5 Discards (Cracked) 3 bubbles
OVEN = Looks fair few air blisters

1 Run out
1 OK mat velvet,
2 OK fairly velvet

445 - 12 Discs 8 OK 1 2nd (air bubbles)
3 Discards (2 Var cracked 1 air bubbles
good release - Some air pockets in
Var & some show after transfer
Transfers = 8 OK 3 Discards
OVEN - Looks very good -
Plates = Very small bubbles on all
24 plates -
1 OK
3 OK Velvet
1 Moderate Run out

473 12 Disc 7 OK 2 2nds 3 Discards
(2 peeled 1 cracked) Looks good - flows
well - free release 4 Records 4 OK
very fine velvet surfaces -
Transfers - 4 OK 2 2nds (Cracked)
Discards 6 OVEN - Looks very
good - Plates OK

471 - 12 Discs 10 OK 1 2nd (air spot)
1 Discard (1 small bubbles) Works very
good 3 struck to plate forced off
& OK
Transfers 10 OK 2 Discards
(Cracked) OVEN - Looks very
good 5 Records 3 OK very velvet
1 Very slight RO on
start but clapped on release
1 Run Out

470 - 12 Discs 3 OK 3 2nds
(2 Cracked 1 pickup) 6 Discards
(peeled cracked & halves) Stuck to plate
Stuck sticky surface
Transfers 3 OK 9 Discards
OVEN looks usual good plates
21 Cracked & pucked 9 plates
not cracked Not Loaded
N.G

469 12 Discs 3 OR 5 2nds (2 Cracked 2 Chunky 1 air opal)
4 Discards - Looks poor
stick to plate Cracks easily + suddenly
Transfers 3 OR - 3 2nds - pull outs
Discards 6 - Oven looks very good - plates - few bubbles on all 24 - Not tested NG

468 12 Discs 1 OR 2 2nds 9 Discards (5 peeled 3 Cracked) Looks very poor stick To plate. Transfers 3 OR 9 Discards - Oven looks very good - plates - some bubbles on all 24 plates
NG not tested

460 - 12 Discs - 9 OK 1 2nd Comet - 1 Discard - Varnish had some few air spots + slight spider web Cracks Looks very crazy air spots show faintly / free release - Transfers 4 OR blistered 4 Discards 3 Cracked Oven bad big blisters near edge Plates bad bubbles 24 put them from Discards 6 bubbles
4 Records 3 slight rim out 1 OR.

459 - 8 Discs 4 OR 1 2nd (air spot) 3 Discards 1 peeled 2 Cracked free release looks good Varnish Cracks when stands in free heaven
NG - Not tested

458 11 Discs - 8 OR 3 Discards (cracks) Works good - fair surface, free release surface puckers slightly
Transfers 7 OR 1 2nd (very small crack) Discards 3 pull outs
Oven - looks fair 2 air blisters
Plates - very few small bubbles
Discards 6 cracked
5 Records 5 OR Velvet VERY GOOD

457 - 12 Discs 5 OR 2nds 1 (Cracks) Discards 6 - (2 Cracked 3 peeled 1 pick up) free release - Looks good Cracks Ca ceiling
Transfers 3 OR 7 Discards 2 2nds air bubbles
Not tested NG

Alkali Blue BR

455 12 Discs 9 OK 1 2nd (air spot)
2 Discards Cracked Wks good
good surfaces Dinky coating
free release
Transfers — 9 OK 1 2nd (air bubbles)
Discards 2 (Cracked)
Oven fair - air & Plates
Plates — some bubbles on acc 24
Discards 6 (Cracked)
5 Records 5 OK Very fine Velvet surfaces
all alike — GOOD

12% Paraaminoformanilin

475 = 12 Discs 8 OK 4 Discards
(1 peeled 3 pickups) Wks fair, cracks easily
free release,
Transfers 7 OK 5 Discards
Oven look very good —
Plates acc OK
5 Records 5 OK Surfaces good (Heat ?
Case with cliff-caccy beam ?
VERY GOOD REMARKABLE

FINEST YET Had a cold perhaps hearing bad against dog pound ?

~~5% [illegible]~~ Malaka [illegible]

476 — 12 Discs 8 OK 4 discards
(peeled. Works good fine surfaces
~~Oven~~ — graphite not
Transfers 6 OK 1 2nd small crack
5 Discards pull outs
Oven — Looks good
Plates = few bubbles on acc 24
5 Records 4 OK VELVET
1 Very slight run out

474 12 discs 8 OK 4 discards
1 debit flow smooth — 1 cracked 2 peeled
Wks good free release good
surfaces
Transfer 8 ok 4 Discards (Cracked)
Oven Looks good
Plates OK —
5 Records — 5 OK compact hum
surfaces not quite as good as
475 VERY FINE

There is some [illegible] yet
Paraffin [illegible] graphite [illegible]

492 – 12 Disc 6 OK 3 2nds Left ripples
3 Discards Wks fair 3 Streak
No Test

491 – 12 Discs 1 OK 11 Discards dont flow smooth Wks poor sluggish
2 plates streak
Transfers 11 Discards all peel easily
No Test

382 49 plates 24 Discs 18 OK
6 Discards – Wks good fine surfaces
fair reclaims A1 – Transfers
OK 18 Discards 6 Cracked
Plates 48 OK Oven – fair a few
air Bristers

496 – 12 Discs 5 OK 2nds 2 (1 left peeled)
Wks fair – 3 streak to plate
surfaces streaked
Quandary Not tested

495 12 Disc 7 OK
1 2nd (fine crack)
4 Discards 2 peeled 2 cracked
Wks good 4 check to plate
Quandary
Transfers 7 OK 3 Discards
2 pullouts
Not tested

493 – 12 Disc 4 OK 1 2nd
7 Discards Dont flow
smooth Wks poor
3 Check to plate
No Test

Something Wrong Thurs –
382 23 Discs 8 OK 1 2nd edge spalf
14 Discards 10 peeled 4 Cracked
No Test

probably 383
490 – 12 Discs 5 OK 3 2nds
1 left 2 Checks Crax 4 Discards
Dont flow smooth Wks poor
3 Check to plate
No Test

489 – 12 Discs 7 OK
1 2nd Cracked.
4 Discards 2 ckd 2 peeled
3 sticks to plates
No Test

384 – Vannah Reg – Double length of time in mixing 120 plates 60 done 50 OK 1 2nd Cracked 9 Discards 4 Cracked 2 peeled 2 lifts. Looks very good good smooth surface free release A1 –
12 Records. 30K 4 Run outs 3 very slight run outs 2 " Very slight not relevant pretty good surface recycled marks no wax horn
Transfers 50 OK 9 Discards Cracked 1 pull out
There is a sample of Reg to Judge Allen Esq

485 12 Discs 8 OK 1 2nd Cracked 3 Discards 2 peeled 1 pickup – Looks good – good surface free release 5 Records 4 Run outs 1 Run out surface loud
Transfers 5 OK 3 2nds pull outs 4 Discards – Cracked = OOEm = Looks good – free release

509 12 Discs 10 OK 2 Discards (1 Lift 1 Cracks) Looks very good – fine surface free release A1 Transfers 8 OK 3 Discards 1 OK small white spot OOEm = plates very good few bubbles –
5 Records
1 Slight run out
3 Bad Run out
1 RO

507 = 12 Discs 10 OK 2 Discards (small lift ups)
Wks very good clean surf some face scratches
Opats bent not soft = free release
A1 =
2 OK
2 Slight movement
Surface fair Transfers OK 9 2 2nds
Light pull out 1 Discard pull out
OOEm = Leaks good.

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506 = 12 Discs 10 OK 2 Discards
1 Cracked 1 peeled - Wks good free
release A1
2 OK
3 Very slight movements
face surfaces not regarded as
Reg Transfers 9 OK
small whole opat small crack
Discards. Cracked 2 = OOEm
good 1 lift up -

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362 24 Discs 18 OK 6 Discards
peeled — Wks good fine surfaces
free release A1 —
3 Very slight movement
2 Run out not bad
OOEm = Leaks fair few air blisters
plates 48 OK
Transfers 18 OK 6 Discards
Cracked.

---

516 12 Discs 9 OK 1 2nd Coud.
lift up — 2 Discards 1 lift 1 cracked
Wks very good face surfaces slightly
Quandy = free release
Transfers 9 OK 3 2nds Slight pressure
OOEm Leaks good —

S S

483 12 Discs 7 OK 2 2nds 2 Cracks
3 Discards Wks good fine surface
free release —
1 Run out
3 OK rough surface
1 slight run out
Transfer 5 OK 2 2nds pulled discards 5 Cracked

510 12 Discs 9 OK 2 2nds Lifty
1 Discard 1 pealed Wks very good
free release Transfer 9 OK
1 2nds 2 pulled Discards 1 Cracked
Oven bubbles all over plates
four four locations
4 OK Very good surface
1 Run out slight
Very good

Make Wear test,

505 12 Discs 10 OK 1 2nd fine crack
1 Discard Cracked Wks Excellent
free release slightly smudgy
A1 —
1 Very slight Run out
2 OK not very good surface
1 OK four locations
1 Bad Run out,

511 12 Discs 10 OK 2 2nds Cracked
Wks good free release A1
4 OK only four surface
1 Very slight run out
Plates rough Very bad
Transfer slightly heavy matte surface
Discards 1
Transfer Discards 1 Crack
1 Deep scratch 1 Out,

512 12 Discs 10 OK 2 2nds Cracked
Wks very good fine release
slightly smudgy A1
5 OK but surface not so
good as 38M Reg

504 12 Discs 11 OK 1 2nd Comet
small crack Lbl Excellent
slightly smudgy free scratches
A|1
2 Runouts
3 OK Surface Like New
Transfers OK 11 1 white spot
No Runouts
Cover free of ~~scratches~~
Stickers Plates
free of scratches on all -

503 12 Discs 10 OK 2 2nd cracked
near holes both Comet -
Lbl Excellent free scratches
A|1 - some white spots shown

1 OK Swipes
1 Slight run out
3 OK Surface good

Transfers 10 2 white spots
Cover free of scratches
Plates - all OK -

514 12 Discs 11 OK 1 2nd light crack
Lbl Excellent near mint gray
appearance heavy = free scratches
A|1
5 OK Good scratches
Nearly VG cover
Transfers 11 OK 2nd 1 scratch
Covers - Very Good, normal
Plates = Heavy Matte scratches
Runs -

Better Run Wear Test

513 12 Discs 8 OK 1 2nd
Runouts 3 1 cracked 2 small holes
Lbl's fair - slightly smudgy -
free scratches, Volume Heavy
4 OK not VG cover
1 Slight run out not VG cover
Transfers 7 OK 2 2nd free scratches
Recorded 1 Cracked
2 Dust on Surface
Even Very Good enough
Plates = heavy matte scratches
1 Runout Trimmed -

484 12 Discs 8 OK 1 2nd Cracked
3 Discards peeled Looks very good —
free release
3 OK Velvet
2 Run outs —
Transfers 5 OK Discards 4 Cracked
Cover — fair few air bubbles
Plates Two bubbles one each

502 12 Dis 6 OK 6 Discards
3 Cracked 3 peeled
free release
2 Very slight run out
1 OK
2 Run outs —
Cover — few air bubbles —

482 12 Discs 7 OK 5 Discards 4
peeled one cracked, Looks fair —
Stacks to plate —
4 OK only just velvet not quite
as good as rest 1 Run out
Transfers 7 OK 1 2nd Crack —
4 Discards Run outs
Cover — Looks good few air bubbles
Plates — bad bubbles on all
4 Raised - Discarded

481 — 12 Disc 7 OK 1 2nd Ragged
holes - 4 Discards 1 peeled
1 picked up — Looks fair —
Brownish Yellow Marbled from
segregation Want more $SrCO_3$ —
5 OK Velvet very
Transfer 7 OK 1 Cracked 1 2nd peel out
Plates small air bubbles on all
Cover — Looks good —

521 — 48 plates 24 Discs 24 OK's
no 2nds or discards Fair Excellence
Surface Looks good free release
Transfers 24 OK Checks 48 OK 1
raised discarded — Cover very fine
12 Records —
5 OK fair surface
5 OK Velvet
2 Run outs —
Better than Requires for run outs
Surface generally not as good
as 384 —

522 42 plates 21 Discs 19 OK
2 Discards 1 Cracked 1 peeled
Wks Excellent good appearance
free release A1
Transfers OK 19 Cracked 2
Plates 42 2 repaired 2 Cracked
Dust 1 all discards Oven good
few small blisters
12 Records
2 Run outs
1 Bad run out
4 OK not nearly as good surfaces Reg
2 Slight run out
3 Very slight run out -

520 - 48 plates 24 Discs 22 OK
1 2nd Cracked Discards 1 peeled
Wks Excellent free release A1
Transfers OK 21 Discards 3 Cracked
Plates 48 OK 1 Dust 1 small batch
discards - Oven very fine -
12 Records -
8 OK Very VEcent,
2 Slight run out only at start VEcent
1 Very slight run out not VELvet
1 " " Velvet
Surfaces fine Glitter Uneven Reg probably Can't get
Try Wear Seal-ded/it Coats

519-24 plates 12 Discs 11 OK 1 Discard
Cracked Wks Excellent - free release
A1 -
Transfers 9 OK 2 Discard Cracked
1 2nd small Crack -
Plates - some bubbles on all 24
Discards 5 Cracked 1 repaired
Oven - Very good
5 Records
3 OK VELvet
1 Run out
1 " only at start

518 12 Discs 10 OK 1 2nd left cup
1 Discard dent flaw smooth
Wks good - free release A1 -
Transfers OK 10 1 Discard peel cup
1 2nd slight peel cup -
Plates some bubbles on all
1 Discard Ring - Oven very good
2 OK Velvet 2 Run outs 1 Slight Run out

523 42 plates 21 Discs 15 OK Discards 6
3 left. 1 peeled 2 Cracked —
Lobs good — Free scaleman slightly unmidgy
Transfers OK 14 Discards 6
Cracked 1 Dirt. Plates, 42 OK 4 Discards
raised — Oven Lacks very good
2 Left open
12 Records 7 OK
5 Slight run out
Transfers fairly VEcoat,

524 46 plates 21 Discs 13 OK 10 Discards
8 Varn peeled 2 cracked - Lobs good
Slightly unmidgy Discards not all
due to Varnish -
Transfers OK 12 Discards 2 Cracked
Oven - Very good = Plates 46 OK
2 Discards to backings -
7 Records — 3 OK not VEcoat
3 Run outs
1 OK Cuts —

415 — 96 plates 48 Discs 31 OK
17 Discards (15 peeled 2 Cracked)
Discards not all due to Varnish
Lobs good — Transfers 26 OK 21
Discards Cracked 1 2nd peel out
Oven Lacks very good —
Plates 96 — Discards 3 dirt —
5 Recessed —
12 Records 7 OK VEcoat
2 Very slight Run out
3 OK not VEcoat

527 — 42 21 Discs 16 OK 5 Discards
2 peeled 3 Cracked Lobs good
Unmidgy Dark red, Yellows & Greens
after Transfer free scaleman
2 OK
6 Run out Rough Varnish

440 - 96 plates 48 Discs - 43 OK : 2nd
4 Discards 2 peeled 2 cracked
Lobs Excellent free scaleman A1 —
Transfers 38 OK 10 Discards Cracked
Plates few backings on old plates
2 Discards 2 dirt 1 Ran out
Oven very good some plates have
air bubbles
12 Records — 4 OK VElvet 3 OK not velvet
at start but as after
Pretty fair Varnish 2 Run outs
3 very slight run out

525 48 – 24 Discs 15 OK & Discards
6 peeled 2 cracked, Looks fair
slightly Dimmalgy free release
3 OR rough
3 Run outs, rough NG

528 – 48 plates 24 Discs 20 OR
1 2nd left up – Discards 3 – Cracked
Looks very good free release A1 –
Transfers 19 OK 3 cracked 1 dirt
1 2nd Light pull out Plates 48 OK
2 Discards removed OVEN very good
12 Records –
2 Slight Run out not quite VGOR
2 Very slight Runout Velvet
5 OR VGOR
2 Run out 1 family bad
Pretty good Vacuum My card is
better a Klean sanford cleaner
practically Their sanfoam are good
as any
Rejuvenator albums is cheap-made –
Penny Technically =

1 wrong pkg
pics – 24
1971

530 – 23 Discs 18 OR 2 2nds
(Check Count) Discards 3 (Lift ups)
Looks very good slightly Dimmalgy
some few seed spots, free
release A1 –
Transfers 18 OKs Discs 3 Cracked
2 2nds slight pull ups
Plates bubbles on VGOR –
Discards of removed –
OVEN good from my Clutter
1 Run out rough
1 Bad run out rough
2 Slight run outs rough
1 OR VGOR
3 OR rough – Bad NG-Leaf

529 24 Discs 18 OK 1 2nd left up
5 Discards 1 peeled 4 Cracked
Looks good slightly Dimmalgy
free release Cracks easily
Transfers 14 OR 7 Discards
Cracked 3 2nds pull outs –
Oven Very good
Plates 48 OK
3 OK family VGOR
2 Bad run outs
4 slight " family VGOR
1 OR Rough –

531 36 plates 16 Down 17 OK
Duplicate 1 peeled Like Excellent
Free release A1 — Transfer OK 17
Duplicate 1 Cracked —
Plates some breakage on all
Duplicate 6 removed Odem good
Few over 6 Centers —
3 Slight rim cut rough
2 Rim cuts Rough
2 OK Rough
685 Records 50 Gem punched number
Number questionable its yellowing
rough

532. 42 plates 21 Down 18 OK
1 2nd Check — 2 Duplicate cracked
Like Odem good free release
A1 — Transfer 17 OK Duplicate 3
Cracked — 1 2nd pressed out
Plates 42 OK raised 4 duplicate
Odem few over 6 Centers
1 Slight rim cut rough
2 " Fairly velvet
5 OK Fairly velvet
1 OK Rough
1 Rim cut rough
1 Bad Rim cut

20 Candelaria
6 Tetrachloromap starts
turning White —

20 Candelaria
8 Tetra White brittle —

20 Candelaria
10 Tetra four alive

20 Candel
12 Tetra - Number four

20 Candelaria
16 Tetra Beat 20 four

20 Carnauba
30 Tetra —

This beat the Carnauba
Cracked shrinkage beat
Wet pressed it Warm on a
diamond of it CRUSH out
of wire — Guess there is
Something in these
Submicrocarpo...

None are available

Check Beat is 20 Wonderful
Working beg one now 20 Tetrachloromap

538 23 Disc 20 OR Discards 3
(2 Cracked 1 peeled) Looks very good
free defects — A1 — Transfers
1 OR 19 — Discards 4 cracked
Plates 1/16 OR 2 Discards dust
2 stained —
Coin — looks very good
2 OR not velvet
4 OR velvet
2 Rim dent not velvet
1 Slight rim dent not velvet
Thinks good as mould has run
484 Times + mint Collectors

540 — 24 Discs 21 OR 2 Zinks
(2 cracks 1 Corrod) 1 discard cracked
Looks fine slightly smudgy free
defects, A1 — 1 Transfer 19 OR
3 discards (Cracked) — 2 2nds
light pinscores
Coins not good pocketmarked
Plates 45 OR 2 Discards Collectors
1 Bad rim dent
1 Rim dent rough
6 OR velvet
2 Slight rim dent not velvet
2 " " Velvet -

541 — 23 Discs 14 1 2nd left
8 Discards 5 packed 3 minor
Cracks Looks good, slightly
smudgy free defects Mostly
Thinly
Transfers 1 OR 17 Discards 10
Cracked — 1 2nd pinscore
Coins — pocketmarked Plates
heavy mostly dings 4 OR

542 — 24 Discs 20 OR Discards 4
2 peeled 2 Cracked Looks good
free defects 1 slight
Rim defect 18 OR 1 Corroded
Cracked 2 chipped rim Cole
Plates 1/4 OR Coins Looks good
Not yet looked at —

543 24 Rnds 15 OK 6 Rounds
4 pecked + Cracked → Lots good
Very good surface — Some scratches
Transfer 14 OK 6 Rounds
Cracked Crown — good —
Plates 11 OK

Not yet Loaded Test

544 — 24 Rnds 20 OK 1 complete
rounds 3 — 3 pecked 1 cracked
Lots very good Excellent surface
Some scratches — Transfer 18 OK
1 rnd 1 white spot 1 light place
out 2 Small Cracks
Plates 16 OK Crown very good

Not yet Loaded Test —

545 24 Rnds 9 OK
15 Rounds 6 pecked
Ckd Lots good-free
release — Some abrasions
Transfer 9 OK 15 Rounds
Cracked Plates 14 OK
Thin in spots Small print
wall — Crown — Very good

Not Loaded yet Test

546 24 — 16 OK 8 Rounds
5 pecked 3 Crkd — Lots good
Very good surface —
Some scratches — Transfer
11 OK 13 Rounds Cracked
Plates 48 OK 3 Rounds

Not yet Loaded Test —

March 20. 1913

We have at last got somewhere from use of iron filings distributed over face of a grafted wax Record,

Used filings from 30 cu yds treated with HCl to clean them washed well then used Dilute Acetic to displace water & then dried —
Most of them face from the liquid and coat the latter over great thickness,

We find very weak Cu solutions must be used + acidulated with K Bisulphate — not H_2SO_4

The filings should be kept moving otherwise they are pulled to the Cu fields on Record & we break the leverage is small

that it pulls off a piece of the Cuticle this makes a hole & an snap in the nerve

Heavy fillings like these in back as they make good contact by their weight whereas ½ reduced by hydrogen from exide in lead light & repel in water

Also, that when the fillings have been baked for a minute they get so coated with copper that they no longer wet promptly & ~~the~~ they should be shaken off & fresh fillings put on & this done several times —

We shall have to work up the technique so that no spongy Cu is left on perfect & finishing will be unnecessary & mechanism which will

Keep the plug in movement after a rest of 3 or 4 seconds & mechanism generally to make it easy for the man in charge to produce the fillings without holes, which from Experimentation in Mexico leads me to believe that no Electrolyzer using graphite & fillings ever gets all corroding free from holes, which may not matter where ink is used but in the phone & every hole is a source of danger in the nerve. These holes are generally about ½ to 1/1000 inch in diam

No 1 - wax - Liquid or Black too strong - action too strong not being able to move fillings quick enough (12) all soluble to the

The film had use a brush
= many become detached
& settled down along
bottom of tank -
Think this will be no
Record in a way does
The fumes used as previously
described - putting
Bath -
KO2 Record Expt
used solution 2/3 rds weaker
This gave better results
but [illegible] working record
in dish got loose &
spoiled it so it [illegible]
be no better than KO1

KO3 Expt - used a supposedly
weak sol of Cu & formally
accelerated [illegible]
KSO4 This work very
much better - decided
use the brush as it
seemed free of fumes - to
somewhat mottled & the
film must be very thin -
The plating being slower
& the record formerly secured
I was enabled to keep
fumes moving & prevent
them being attached to
the record
It looks fair -

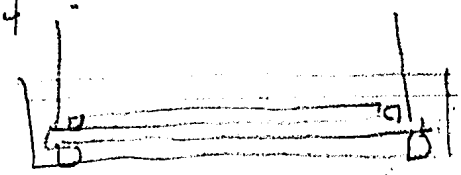
I now must stop guessing
at solution & get down to
actual proportions -

Each record take about
2 or 3 oz of fumes &
fresh doses are put on
every minute or so until
the acid ones have passed
over the rim of the record -

No 4 disc wax Expt

1% Sulphate Cu without any acid or Bisulphate, working slowly & gives brownish red deposit nearly free of dots of spongy Cu (10) very fine dots in bottom 1/3 near back. The film is very good no holes except due to defects in the graphite dust,

I immerse the disc & pour fuling on & immediately brush it flow back & forward over the graphited surface It is very slow it takes 15 or 20 minutes



1/4 bath over. I record on I' connected it by angle bar required to bring threads up to track below

The grain is very fine

I flashed a 2" disc very thin & it is fine - only 3 holes all defects of original no holes that show yellow by solution falling under Edge & plating Crystals - I put in bath 10 pm Monday I am now going to lay 1/40th of weight of Cu I deposited in 1% dep of acid K Sulphate to increase deposit.

No 5 = used 1/100 % as in 4 of Copper but used Bisulphate ~~deposit~~ from 5 to 40 gms ~~Acid~~ it acts quicker but not so very much & am fixing the disc so I get greater amount of the Solution over the disc its now 1/4" & I want to get 3/4" the solution

will not be so quickly Exhausted

I find that if following are. pretty much wet, they go on drier part of plant and Sunflower

No 6 is used with twice as much Copper as other two and I used 15 drops H2SO4 to 400 cc water
2 grms Bensophtic —

Will use wet foliage + more liquid next Lecy —

No 7 is 2% CuSO4 no Sulphuric
K — 80 grms to 4000 cc

It works slowly but I think ok — oxidizes dark in and when we started,

Think we should feed, something to stop oxidation

It wants a drop per drop
Think 2% without acid is best yet if can get good circulation + distribution by foliage

No 8 = 2% $CuSO_4$ no Bisulphite — but I used 10 grammes of 40% formaldehyde to see if it stopped oxidation — Worked same as others Last filmings a trifle [illegible] remaining [illegible] Times — Works brighter in bath but turned dark like the [illegible]

No 9 Celluloid

2% $CuSO_4$
80 grms $CuSO_4$ 4000 cc
10 cc Formaldehyde
Comes brighter than wax but don't think graphite is any so good — takes Considerable time To stop coming green

Used Hydrazine Sulphate in the 2% $CuSO_4$ — This keeps the Copper deposited bright almost white The grain is of Extraordinary finess, its perfect, no loose Copper Strong as the deposition is slow & the iron filings do not fluff up & shed the reduced Copper — Care should be Taken with the brush & filings there so much used as the deposit is very thin & liable to be injured by rubs of brush Worst thing Can be given filings to dry before Electrolysing — The Condensation seems perfect It don't oxidize in the air but remains yellow white

Ditto another with Hydroquinone Not so good not so white or fine & it darkens a little in the air —

Hydrazine Sulphate is best, but its very slow acting — if want quick action, an extremely quick amount must be used — With this reagent there is no fluffy Cu left on surface without it just plain 2% $CuSO_4$ there is a very fine Cu on surface but entirely unobjectionable, The Hydrazine seems to make luminous films on the wire + it don't leave it except too much Hydrazine used — a few drops in the tube will be all that is necessary if any is used.

We now coat Six Celluloid grafted Submersion — grafted 15 minutes one branch — The Celluloid is blue + it shows when the graft is removed — However this simple test of graft is Independent Hackpfennig does the box although I hardly appear to be any grafted on it its Dufton 097 — Nucleus amorp but its thin leaves of flakes graphite several hundred mesh fine — We will use 095 which is purer 097 87% pure whereas 095 is 95% pure — Last one of the 6 is No 15

We use 2% $CuSO_4$ 80 grms to 4000 cc water + 10 cc 40% formaldehyde — this keeps it bright while plating are coming

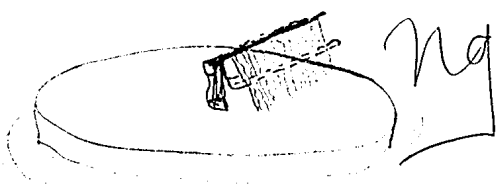
The filings thru 30 on 70 round Knits back and Cleaned with Hcl Kept wet in HCl — brung clean a coat 6 or 8 deep on Knife edge in sections over record immersed in Solution — immediately after the filings are on a Medium magnet To ~~test~~ the record to move the filings & then back used without any pressure to move the filings about as if they stay too long they plate to record & when moved pull of the Edge deposit & take the graphite with it Thus will cause an hole in the working. Already. The dash is moved up & down to Circuit the Legend which is rapidly Exhausted by the filings.

The record seems to cover fine, & when put in plating bath with 3 cups ~~##~~ in 5 minutes the oxide is gone & face looks whitish yellow & Even all over

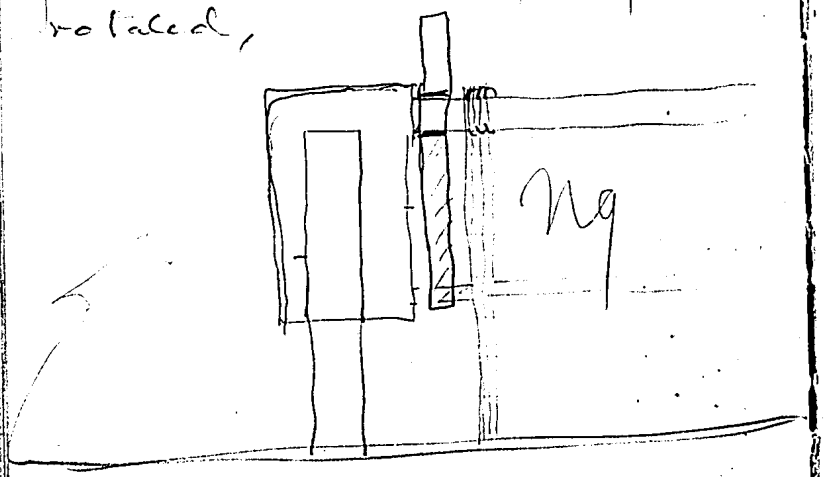
The record after it comes from the filing bath rather rapidly turns dark by Oxygen but this is accelerated by the Current quickly

The Expert part of the process is to move the filings about the moment Copper appears from them & prevent them from freezing to the deposited Copper —

I think I can use Iron wires thin



Rotate the wire which lays on the record with reference to the pressure + the wires are thereby rotated,



Wednesday

1st celluloid put on 2½ ft

2nd " " worked at longer + more [illegible] till it [illegible]

Wax No 16–

No 17 1st celluloid

18 2nd celluloid which was worked longer + more [illegible] thicker deposit

No 19 did same as 18– using time + plenty [illegible] It exhausts the solution and it ought to be put in a [illegible] solution to furnish well– I find by pouring more solution over record it does the trick–

1 to 20 used more Solution
over record Looks fine
to white like in Solution
+ Crenn quick —

21 done same as 20 —
Accidentally cut thumb on
smooth part and edge rather
hard as I more like it
from me. The thumb mark
shows good & quite
nice ridges

22 as 2% CuSO4 no formal
but 10 cc of 10% each
of H_2SO_4 — Thumb good
from rod not right
Has no ridges in final
like in the rest of Solution
yet, its more rapped than
others used —

23 Dup of 22 10 cc of
10% each H_2SO_4 & 2% Cu
Looks rapped & just like
same as 22 —

24 — as 2% $CuSO_4$ +
+ 20 cc of 10% each of
H_2SO_4 — [illegible]
cut mirror [illegible]
from 10 cc and
think 10 cc is rapped —

25 Dup of 24

26 Dup of 24 — goes in 4 Revolution
both two fine ridges on smooth
part can see blue — Covered more
& not melted in the least, white
when came out —
Thumb shows 095 grafoto

Note = It takes 2 grams Acetate To Coat a record when 250 cc of Nitrating Sol & 250 cc Reducing Sol used -

The object of using Camphor in the Amyl Acetate sol for Coating Cellulose blank To Replace Blank is to leave a solid residue after amyl has Evap. To act as solvent when heated for press. The Amyl & softens & Combines Camp in the pores & leaves it that is fact as solvent together with some amyl A to keep it soft.

Solution No 1

200 cc Amyl Acetate
24 grammes formula or Natural Camphor
It cuts to a film —
This is for sticking Celluloid to blank -

Solution No 2

200 cc Amyl Acetate
48 grammes Natural Camphor —
Used as above can't say which is best yet.

Solution No 3

200 CC. Acetone Amyl

75 grms Camphor -

Expmts.

With celluloid Coated with silver To find out how to stop holes in plating

Very Thin .2" discs of polished Celluloid polished by pressing hot with a polished plunger

1st to ascertain if solution of Reg $CuSO_4$ plus H_2SO_4 attacks the celluloid or has any effect on the ZnO. deposited on the celluloid or on exact particles

2nd Coating a disc with Thin silver & putting in Reg plating Bath to see if Bath has any action on silver

We silvered a piece of window glass, found it full of very fine holes by holding lamp under it in mirror — also — several holes several times bigger than the finer group — Middle diffraction when lamp below is composed of an aluminum hat of very fine holes, probably 30 to 40 lines a record groove We shall have to do better than this on glass if it is to be a success on cellulose We will try filling some of the finer holes (Eastern Slide or Photo of Cover)

8.50
10.91
9.41
14.93
8.50

12 amp deposits $\frac{1}{1000}$ per hour on big disc - 50 inch area,

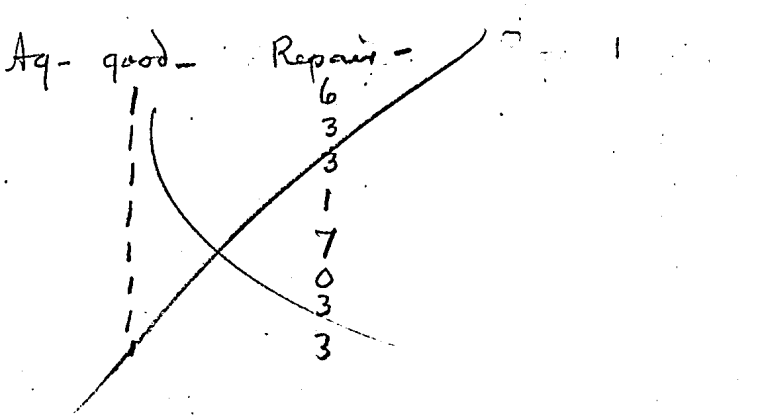
Small Disc has $\frac{1}{10}$ the area - of the 50" area

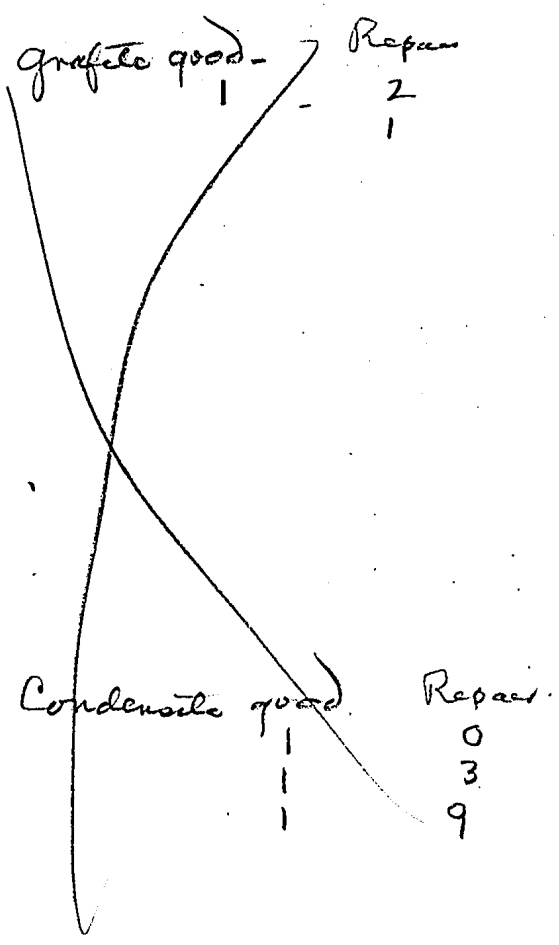
1 amp on ½ of big disc is	100 mil amp on small
2 "	200
3	300
4	400
5	500 —
6	600
7	700
8	800
9	900
10	1. amp -

Dimmiddie Silvers glass seeq Aq Sol.
Starting at 350 Ma Amps in,
also a celluloid, run 30 minutes
celluloid beat no holes celluloid stripped
glass, 2 very small holes —
Celloid covers best with cover —
1/2/1000 Inch —

glass run with leg Hea Aq
would not cover all over
for 20 minutes, I removed amps
to 500 Ma amps the areas uncovered
then covered right away
It looks as if the seams etc on
the Silver did not cover during to
low density the Covered plate
absorbing the Current & high
density polarized the plated
surface & caused the current
to race to a high density compared
on the uncovered

This looks as if Silver coated
Eels obtained get full Current
10 @ 12 amps on the disc at
once,


Aq- good-
Repair -
6
3
3
1
7
0
3
3


graphite good-
1
Repair
2
1
Condensate good
Repair
0
3
9

487 24 plates 4 Discs 2 OK
2 2nds — Transfers 1 OK
2 discards 1 2nd — plates nCC
have bubbles 7 plates no cracked
20 plates Cracked
NG not leaked

486 12 Discs 6 OK 6 Discards
4 peeled 2 cracked Wks good
Pins release Cracks Equally
Plates — Discs 7 cracked —
Transfer Some bubbles on all —
24 plates Three pieces —
Oven looks good some bubbles
NG not leaked

485 12 Disc 8 OK 1 2nd Cmp 3 Discards
2 peel 1 pick up — Wks gd Pins release
Transfers — 5 OK 3 2nds — Discards 4
Cmp
Oven looks good free air bubbles
Transfers on CC air bubbles in cure
24 Discs 3 removed
No Test

484 12 Disc 8 OK 1 2nd Crax 3 discs peeled — Wks very good fine surface free release Transfers 8 OK Discs 4 Crax Oven — Looks fair few Ejection Plates bad bubs on all 24 No test.

483 12 Dis 7 OK 2 2nds Crax 3 Discs 1 peel 2 crax - Wks good fine surface free release Transfers OK 5 2 dirty 2 peel out Discs 5 Crax — Oven - Looks fair, air blowing, bad ejection all No test

492 12 Disc 6 OK 3 2nds left 3 Discs Wks fair 3 clear No test

491 — 12 Disc 1 OK 11 Discs dont flow smooth, Wks poor clamp pick — 2 plates clear Transfers 11 Discs all peel out. NG No test.

382 49 plates 24 Dues 18 OK
6 Dueds peeled Coke good
fine surface free accum
A-1 Transfers 15 OK 6 Dueds
Crazed Plates - 48 OK ovens,
four free Circulars -
No test,

---

551 - 24 Dues 20 OK 2 2nds 1 Left
1 Corner 1 Crack - 2 Dueds Crazed
Coke fine Excellent surface free accum
Transfers 19 OK 4 Dueds Crazed 1 short
Plates. 48 OK 1 reused 1 Cracked
OVEN good

Rough slightly uneven	3
OK Rough	1
No test on other	5

---

553 - 24 17 OK 3 2nds 1 peel 1 check 1 left
3 Cracks - Coke good slightly smudgy
Transfers 18 OK Needed 4 1 2nds pulled
out around seaming 1 bad edges
Plates 50 OK - oven good
Didn't test moulds pounded
8/8 times - Too rough -

May 12 1913

554 – 48 24 Disc 18 OK 1 2nd
5 Ducks Crop – Wks good fine
seeds a slightly smudgy
Transfers 15 OK 8 Ducks crop 1 2nd
Light press cut,
Plates 48 OK – Open good

OK Little Rough 1
Slight runout good surf 1
OK good surface 2
Run out fair surf 1
OK but Cuts 1

521 – Run Three separate times as
554 – 46 plates 23 discs 20 OK
3 Ducks 1 peel 2 crop Wks very
good Excellent surface peel
seeds slightly smudgy
Transfers, 16 OK Ducks 6
Crop over 6 Ducks
Open good – Plates, 46 OK 2 Dis
rejected

2 OK
4 Run out little, rough – one cut

May 12 1913

Keeping 4 petri 2 paraphenylenediamine
Varnish 24 hours then flooring

6 plates 3 discs — 2 OK 1 comd 2nd —
Very shiny — fair surface —

Ditto 48 hours
2 OK surfaces about same as 24 hours

Ditto 96 hours 2 OK surfaces better
than 24 or 48 hours

Ditto 120 hours — Very much better
surface than 24 — 48 — or even 96 hours
but both plates stuck to black

559- 2% Paraphenylenediamine
5% Penta.

560- 3% Paraphenylenediamine
5% Penta

561- 3% Paraphenylenediamine
6% Penta.

562 521 2½% Ranacaohol

563 521 5% "

564 384 2½% "

565- Varnish drawn off flowertubes
& saved till get a quantity —

May 12 1913

384- New Lot out stock

2 OR not velvet rough
3 Bright run out.
1 OR Velvet
1 Run out.

Notwithstanding the 3 jets of Solution washing from grafted Master there are still bubbles clung to surface while plating I am now going to Cover 1¼ / 1000 with Electrolyte both in Iron Vat Chamber this will bust them —

55% - Reg 521 with 5% more alcohol - to rig - only got 50% good transfer with 2½% more alcohol got only 54% good transfers seems to be thicker than usual coat.

561 48 Plates 24 Discs 20 OK
2 2nds left. Discs 2 (1 cracked 1 peel)
Looks very good - very good surface
2 stuck to plate A-1 83⅓% Transfer good
12 Records Tested
11 OK
1 Very slight run out for short space
Plates. 48 OK 1 dirt 1 scratch
Transfer 17 OK 6 Discs 1 2nd

560 24 Doc 19 OK 1 2nd left
Ducks 4 (3 left 1 reel) Wks very
good - very good performance
1 stick to place A 1 - 80% -
Transfer. 16 OR 3 Ducks Crax
2nd 5 pull outs place. OR
Tests
8 OK
2 very slate run out
2 OK - Kille Chandelier

559 24 Do 20 OR 4 Ducks
(2 left. 2 reel) Wks v good very
good - 3 stick pickup.
A-1
Tests
7 OK
3 moderate run out
1 Big flare
1 Cadet Recall

563 – 521 with 5% less alcohol
24 Duc 17 OK / (1 peel 2nd) 6
ducks (3 crax 3 peel) take good
good amt free release,
Quandary – Label left on one
when used for test –
all have red tinge not black
as they should be Black
mistake cream made with
Transfer 14 OK 10 ducks
Plates 48 – 2 rancid
OK 9 – velvet
Run out a little – 3

562 – 521 with 2½% less
alcohol – OK 15 ducks 3
1 left 2 Crax – Ducks 6, 4 Crax
who four good amt – free release
Quandary – plate 48 OK 2 left
Transfer 14 OK 10 Ducks Crax
1 2nd Crax in transfer

OK 5
Slate run amt 3
Pug Creek 1
Rust amt 2

Experiment to get Wax
from which we make
emulsion so it will
not be affected by
Water + thus prevent
Cracking sounds
when graphited
Silk Screen to put on
plating Bath —

Using Reg Mountan 4
min | dozing it with
dof Mixings

1st Great Reason

Mixes OK — This gives
Mountan a brilliant blistfree
shiny surface — only need 1/3 quantity
of Carbine Red

Using More cresol resin
gives duller surface
Stir to dish —

Paraldite predomtg of Montan
Stir to dish - shiny surface
— Not promising

Cresol Resin greatly predomtg
Promising Paraldite - shiny surface
Cracks on cooling from
warm to ice cold water
it will leave dish OK
promising — weak & powdery
Cut like Montan — Too
much Cresol Res

Paraldite predomtg with
Cresol Resin stir
to dish - not
promising —

Montan + Rosolic acid don't
mix well — ng —

Promising Paraldite - little predomtg
Carnauba — fraction
shiny but had bad shrinkage
thinkest wall gives very
shiny & transparent yellow
Very fragile cast
Promising — break not shiny
Slightly sticky to heat hand —

Paraldite + Rosolic Acid
don't mix ng

Paraldite + Stearate Aluminum
Don't seem to mix —
ng —

Acetanilid
ng Rosolic acid predom
Shatters dish bad
smooth dish

Skarn and Granolic
Rosario and dont mix
No

Granolic Rosario no and
a Cc declared —
mixes shiny surface
Leaves new chalk form
only shiny surface.
Promising fractures shiny
Little sticky at head hand
thinks to a amendments temp

Skarn A Predom
Pennelite - Stix to chalk
bad - Crystalline No —

Skarn a Predom
Granol Rosario
Dont mix No

Skarn and
Moulan
Comes loose material
Dull brown surface
fracture chalk —
Moulan so evidently full
of mechanically staff had
in compression
to get air to work well

Big shrinkage

If Campanify Moulan surface

Skarn -
White Cement in
Moulan
VERY promising
dont crystalize or shrink hard
fairly good shiny surface
Contracts so cracks evidently 1/8"
around Edges leave chalk material
Dull brick - Rough - Not sticky - good

GOOD

Japan wax Pred greatly
Montan —

leaves dark undercut
Dullish surface
Break dull —
The trouble w the mountain

Japan wax
only punch of Mountain
Cracks — in accordance
family slimy — its soft
& friable — not very
promising alone —

Paraffine GOOD
Stearic
Ceresin —
punch negligible — of mont wax

Comes off dark free
good surface no
shrinkage or only trace

VERY PROMISING

Tough — fine cut, easy thick
at 110C dry for secondary
quiet hgrnd no shrinkage
Low MP —
Top flat —

Stearic
Paraffin
Ceresin
Japan
} abt equal

Mica — Comes free only in 3
Acetamer — Surfaces not very good
No shrinkage at all apparently

Stearic
Ceresin
Paraffin } abt equal

Negroseum BB Base -

Stix bad to dash —
poor surface on press
Broken away
as thin good before, its
Evidently that proper
proportions is essential

Stearic
Ceresin
Paraffin
Crude Montan -

Comes free dish - Contracts in cold
water at 1/8 of edge breaks away -
shiny surface good - hard cut
GOOD promising —

---

good

Stearic
Ceresin
Comenderato Co Crude Montan
Heated dish —
Extra good surface shrinks only
little nearly flat top
Comes off fine from dish
in Cold water —
Promising Cuts hard
& its tough to bend —

Crude Montan
acetanuled —
No Separates on Cooling

Good

Stearic
Ceresin
Montan Crude
Carnauba -

Good surface - Comes free - dont contract. family level top at Center Confused if these were colored black it would be very fine surface -
Very hard to Cut - Strong

Crude Montan Good
Little Ceresin

Very little Contraction
Comes free good surface would be better if powered — hot plate

---

Crude Montan
Paraffin Ceresin —
Crystallizes out H2O

Ceresin
Crude Montan

A little Stearine Pitch to color it black which it does fine — Comes free in section Beautiful black surface — hard — Proper proportions will give good results Shrink —

Stearine Pitch is apparently fine for blackening of ct dont harden

Can get harder on Steam Liquid —

Crude Montan
Ceresin
Alpha Naphtal –
free – good surface
flat top – can bend it
soft, wants less
Ceresin – Promising
New Line –

Phenomenon –
Crude Montan predominating
Alpha Naphtal –
Soft & plastic –

Crude Montan
predominating
a little Ceresin –
½ quantity asto Montan
of Alpha Naphtal –
Plastic bends,
Wonderful effect
of Alpha Nap –

Crude Montan
only 10 to 15% Alpha Naphtal
hard, leaves free fine
surface – Shows
Can soften Montan by
Alpha Naphtal
in Benzene Immediately
Probably want 1/20 @ 25%

Christensen -

4 Sleanic
1 Ceresin
1 ½ min Montan } NG

4 Sleanic
1 Ceresin
3 Montan } almost free not very good surface

4 Sleanic
1 Ceresin
4 Montan } Comes free fine - fair surface

4 Sleanic
1 Ceresin
5 Montan } GOOD Comes free nice surface

4 Sleanic
1 Ceresin
6 Montan } freest of all - GOOD Elegant surface

4 Sleanic
1 Ceresin
2 Montan } Good Comes free

4 Sleanic
2 Ceresin
2 Montan } Comes free in part fair surface

Record Montan used

4 Sleanic
3 Ceresin
2 Montan } All free good surface GOOD

4 Sleanic
4 Ceresin
2 Montan } all free - rounded edges surface pretty fair

4 Sleanic
5 Ceresin
2 Montan } not free - Dull surface NG

4 Sleanic
6 Ceresin
2 Montan } Sticks surface - Dull - NG

4 Sleanic
3 Ceresin
1 Montan } Comes off pretty fair surface Except in middle 12

4 Sleanic
3 Ceresin
3 Montan } Same as 12

4 Sleanic
3 Ceresin
4 Montan } Comes free GOOD good surface 14

4 Stearic
3 Ceresin
5 Montan } Same as 14 surface not quite so good -

4 Stearic
3 Ceresin
6 Montan } about same as 14
No conbraction

4 Stearic
2 Ceresin
1 Montan } Rounded Edges -
Dont leave plate

4 Stearic
2 Ceresin
3 Montan } Dont leave plate
smack press shows poor surface

4 Stearic
2 Ceresin
4 Montan } Comes off intact GOOD
good surface X

4 Stearic
2 Ceresin
5 Montan } ½ leaves plate
not as good surface as as X

21 = 4 Stearic
2 Ceresin
6 Montan } Comes off free without Cutting Edges -
pretty good surface

22 = 4 Stearic
4 Ceresin
1 Montan } Stick to dies will come

23 = 4 Stearic
4 Ceresin
3 Montan } 1/3rd comes off not good surface

24 4 Stearic
4 Ceresin
4 Montan } Stick to dies will come

25 = 4 Stearic
4 Ceresin
5 Montan } Comes off free surface dull

26 4 Stearic
4 Ceresin
6 Montan } Comes off free
Surface fair -

Phenomenon

Carnauba Wax +
Alpha Naphtol – or acetanilid forget which
flat top ½ pride no shrinkage
Resembles + cuts like White Record
Wax

Carmamba Predom
Tabulosulfochloride Para
Formic Acq

Carmamba P
Monomethyl para amidophenol
Sulfuric chemicals

Carmamba P
Hexachloral Rum
Chemicals Crax

Carmamba Pred
Paraamidophenol —
Chemicals-Crax

Carmamba P
Metaphenylenediamine
Free Base - Dark Mix

Carmamba Pred
Acetanilid
Chemicals Crax

Carmamba Pred
Beta Naphthol
Sulfuric Chemicals Crax

Carmamba
Paradichlorobenzol
Crystallized Dust Acq

Crude Mountain used grms 1 to 6 –

№ 1

3 Stearic 1 Ceresin

Mountain	1	Sticks dish
	2	Frz dont mix Good surface
	3	Good surface Auto frez from plate
	4	" "
	5	" "
	6	pretty good surface "

№ 2

3 Stearic 2 Ceresin

Mountain	1	½ frez pryed off very good surface yellow
	2	9/10 " "
	3	½ " fair surface
	4	½ not good surface
	5	all frez. "
	6	" pretty fair surface

№ 3

3 Stearic 3 Ceresin

Mountain	1	Sticks
	2	Sticks
	3	Comes off OK pretty good surface
	4	½ comes off Dull–
	5	8/10 " "
	6	8/10 " "

№ 4

3 Stearic 4 Ceresin

Mountain	1	Sticks
	2	Sticks
	3	½ Comes off Dull–
	4	½ " fair surface
	5	½ poor dull
	6	½ fair surface

№ 6 – note

2 Stearic 1 Ceresin

Mountain	1	¼ comes off dont mix
	2	All comes off – pretty good surface
	3	" good surface
	4	Auto comes off " Little cloudy
	5	" Little cloudy Center
	6	" "

No 5 ? note

3 Sleanic 5" Cream

Montan — 1 1/4 pries off some surface
2 1/2 " " "
3 1/2 " good surface
4 1/2 " " "
5 All comes off " "
6 " " "

No 7

2 Sleanic 2 Cream

Montan 1 1/3 pricis off four surface
2 all comes off rounded edges good surface
3 1/2 off good (fine) surface
4 all off " "
5 1/2 off four surface
6 all off Very fine surface except
in Center 1/2" less dull —

No 8

2 Sleanic 3 Cream

Montan 1 Slick
2 1/2 off good surface
3 9/10 " " " Except center
4 All off " " "
5 " fine surface except small Center
6 3/4 off — Dull —

No 9

2 Sleanic 5 Cream

Montan 1 Stix
2 1/2" fine surface except small center
3 Stix
4 all off fine surface except 1/2" center
5 9/10 off - Too much Gad center
6 9/10 off "

No 10

2 Sleanic 5" Cream

Montan 1 Stix
2 "
3 1/2 off fine surf except 1/2" center
4 9/10 off good " " "
5 9/10 " " "
6 1/2 " " "

No 11 -

1 Sleanic 1 Cream

Montan 1 1/4 off - beautiful surface rounded edges
2 3/4 - off only four surfaces
3 Cuto off good surface
4 " " (fine) " Center also
5 " " "
6 " Very fine surface Center talk

X012 —

1 Skamic 2 Corsair

Montana 1 1/2 off good surface
2 1/2 " " bad center
3 Auto Loose, fine surface hard Center
4 8/10 off " "
5 8/10 off good surface "
6 Auto Loose fair surface good

Center Dull & Cracks all the OER

X013

1 Skamic 3, Corsair

Montana 1 Sticks desk
2 1/3 off good surface
3 1/2 off "
4 All off - rounded Edges good surf bad center Stuck
5 1/2 off Cheeky surface
6 ALL off - 1/4" center Stuck

X014

1 Skamic 4 Corsair

Montana 1 Stix
2 Stix
3 1/8 off
4 1/2 off fine surface
5 8/10 " center dull
6 all off " 1/2" "

Montana Crude GOOD

Manilla Copal - Big bottle only marked Copal —
It doesn't seem to go in at melted + nearly went in - I finished more by it out
Evidently from Australia, comes clambe went in clay 10% —

Fine dust good surface, pried free its hard auto hard + not powdery like Montana —
Contracts some on Left Edge all around dusk 1/4 — It is on hard from packets well
Sits heeled well + all hunting fine surface. No dull Center — Its harder to break than Montana,
Think this Can be worked up

Mowtan
Gum Dammar –
Liquid goes to high lustre
with out Smoking it soaks
bad penalty get it ground
Carefully & Water wh it
which should be got out
before using
Considerable Shrinkage
Self Cracked so it came off
dish square — Thin hard & tacky
hard –
fine surface but not so
fine as Mowtan Copal

The Gum makes good surface
a hardener & toughens Mowtan

Think had too much
Drier in —

Mowtan –
Paraaminophenol hard – fair

Mowtan – Alpha Naphthol NG Cryst
" Isonaphthylamine Sulphonic NG
" Paraphenylenediamine base Cryst
" Hexachloroethane NG Crystal
"

Mowtan + Gum Mastic fair
too brittle — Brittle NG.

Mowtan – Stearine Pitch only
a little greasy softens it
Lead out dont crystal
apparently at all —
Good & Cracks — if it — To
be used only in very very
small quantity necessary

15 — 1 Slavic 5 Ceresin —

Montan
1 Stix
2 Stix
3 Stix
4 Free good surf hardly any bad Center
5 8/10 free " "
6 free - good surf only little bad Center

16 — 1 Ceresin +

Montan
1 3/4 off good surface
2 Stix
3 free fine surface except 1/4" Center
4 Auto loose fine surface all over
5 " " "
6 " " fine small Center

17 — 1 Slavic +

Montan
1 all off fine surf slight 1/4" Center
2 " " "
3 " " "
4 " four dull streaks
5 " " "
6 " Nice Cut dull streaks

18 — Japan Wax 4 Ceresin 1 +

Montan
1 1/4 off good surface
2 Stix
3 1/2 of good surf
4 1/2 "
5 1/2 Very dull
6 1/2 part good part dull

19 — 4 Japan 2 Ceresin +

Montan
1 1/4 — NG
2 Stix Round Edges
3 Stix
4 Round Edge fine surface Center stuck
5 1/2 off
6 All off Very fine surf 1/4" Center dull

20 — 4 Japan 3 Ceresin

Montan
1 1/2 off dull
2 1/4 off fair surf
3 Stix
4 Stix
5 All off Center stuck
6 " " dull

21- 4 Japan 4 Ceresin + Montan
1 1/2 off dull
2 1/2 "
3 Stix
4 Stix
5 3/4 four surf dull border
6 Stix dull

22- 4 Japan 5 Ceresin + Montan
1 1/2 dull
2 1/4 "
3 Stix "
4 "
5 "
6 "

NG

23- 4 Japan
6 Ceresin +
Montan 1 1/2 dullish
2 1/2 off "
3 Stix-
4 1/3 four surface
5 Stix
6 Stix —

24 4 Japan 7 Ceresin + Montan
1 1/3 off dull
2 1/4 "
3 1/4 "
4 1/2 quad surf
5 Stix
6 Stix

25- 4 Japan 8 Ceresin + Montan
1 All stuck.
2
3
4
5
6

NG

All Cummings + Alpha Kapkit NG.

For coloring wax scales
Deep black fat color fine sheen no cracks
Oil black J. very black but —
from Berlin Aniline Co.
213 & 215 Coales St NY

75 32-
250
1600
64
60

Tires 3000 miles 2100

52/780 (15
52-0
260
260

3 / 2100
700

with 3000 — 75000 (18

18
3000
54000

1175

54

54 Tires	60.00
Chemicals 1.80.	1500
Repairs —	20.00.
Patch —	2.50.
Wages	780 00
painting —	10.00
tire work	5.00.
Storing —	50 00
10 KW day 6°	180 00
	11221.00

20/1000 thick 1 e6 —

10/ " 1/2 3c

3.6

62
12
124
62
744

1728 (2.32
1458
270
232
16

12"

144
49
96
1296
10086
11376

32 | 114 (3.6 1/32
96
180

37 1/2
60
12 0
19.8
2 0 1

320000 (12
32
000
64
600
576
24

14 | 300 (21
28
2

21 Tons —

40
40 0 0
1600 20
1 5
3 2 5

100 —
40 0 0
21 | 4 0 0 0
4 0 0
1

450 | 64 1

Notebook Series -- Notebooks by Edison
Notebook, N-11-06-00

This undated notebook was used by Edison, probably during June 1911. The entries report on the evaluation of various chemicals from E. De Haën of Hanover, Germany, for use in making phonograph records. Individual entries note the melting points, hardness or viscosity, character of crystallization, and sometimes the price of the compounds being tested. The inside back cover contains some rough calculations by an unidentified employee. Inserted into the book is an unrelated memorandum from Peter Christensen to Edison regarding an electrolyte produced in June 1911. The pages are unnumbered. Only 12 pages have been used.

17

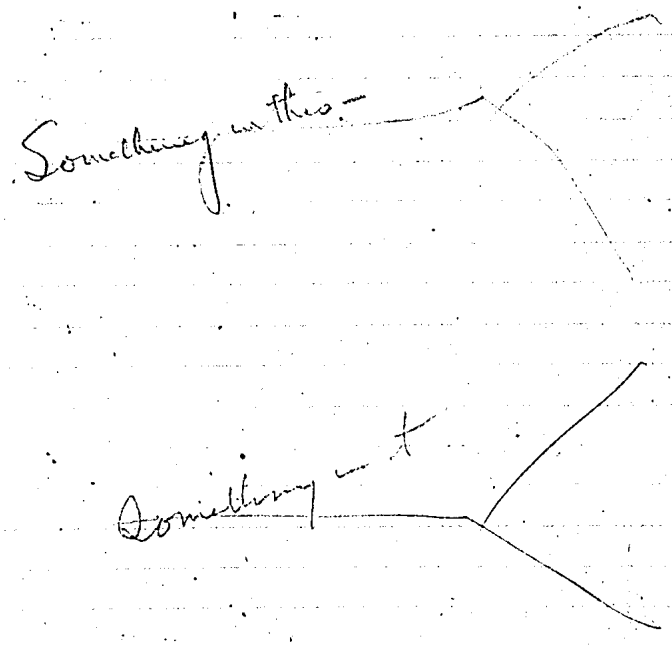
Dekhan Bng Lat Chem —

Dinitrochloro Benzol —
Dont Crystl, fine Calcium lumpid —
Can Carry Lt to Rhodes —
Curious — Cheap 25c lb —
Too soft after hour 192 Bulletin
Chemurgic Crystlzg

Dichloroaniline —
No Crystl — lumped —
Low MP —

Dioxynaphthalene MP Too high.
Outclass —

Paradichlorobenzol
Dont Crystl — Low MP
Very lumped



Hexachloro-ethane Dont melt well

Nitroguanadin — has waters — Neg

Orthotoluolsulphamide Mt Lilliehigh
Neg

Nitrotoluol para Very Loco MP —
1st Gallon Crystt 2nd 1/3 crystt primarpoles
around Edge after 20 min —
Thro would Gz on Gutto for Lowering
MP of Crystal Examin — 1st but crystt
2nd after 3 hours 4th ion sep taken off in 4 hours
Wood Alt a lighter than calculated non crystt Tough and horn
Slim dash —

Monomethylparamidophenol Dont melt

Paraformaldehyde. 30c 26 —
Very Low MP — Very Lumpoid with Zinc
1st bottle on Crystt 2nd bottle 5 min after foam
Slight fumes Shake Gutter — mixture
Dont Smoke Through —
1 2 & 3rd Gallon Bright 3rd took 2 hours 4th 4
very thin 5th brittle —

Pyrocatechin — Loco MP — Dont Crystt — Sticky
+ 2nd Gallon — ~~Dont~~ Neg

Dianisidin (Base) — jet black mix even 1st Gallon — MP Cliffs high - Like Tetra mp — make good coloring medium for new records — mix on even 3rd button rather thick - Viscous

Even when thinks jet black — Extremely small amount showed color mix —

4th Gallon ropey thick hard to stir well to get color seems to want to condense yet by stirring its ok but very ropey + thick like Curlords — No Cryst 1st Gallon Hard Flecks of color Chemical Reaction probably —

+ it might result in ~~tramp~~ Reg Tetra. Mix mixes profoundly altering resulting as usual color — green fluffy 5 5 5 2 3 + 4 Gallon Loads slowly 1 auto — Gritty — best hard = ~~3 [illegible]~~ auto

Nitramine Ortho pure MP low -

Monochloroaniline - Very low MP — Para even 6th Gallon Lumpid — no Cryston all very soft 1st sticky — last button. Tough like Cellulose acts like Triphenylmethane - semi soluble heat.

Malalaldehyde diamine base
MP low — Dont dissolve well —
Smoke. Condensable
poured 3rd bottle — very thick
hard soap — 1st bot Cryst slix dark
2nd soft slix dark 3rd hard bottle comes
off water -

Meta para amino phenol
MP rather high good solvent ~~for~~ of
Somewhat dissolved by the bottle oil
No cryst — 1st bottle hard brittle
slix dark — all stick to dish very bad

Ortho nitro para phenetidin
1st bottom cryst = MP fairly low —
Ashes: little — Black bottoms
1st bot Cryst — slix dark bad 2nd non C
slix bad

Might do for Calorimeter

Benzanthrone —
Quite c. lumpid — mod inP — 2nd button
Cryst — 1st & 2nd buttons Cryst
good — 1st button comes free dark amber
2nd slug 1/2 = very liquid & good —
3rd but 1/3 chips off tough fine amber Cryst brittle
ditto 4th & 5th —

Benzphenanthrene — Large inP — mod —
No Cryst so left 1st & 1st Cryst — 2nd soft
oily flop — 2nd tough tough flex +
Come off dark waxy — fine sinfrom
taken Cryst on sand taken goby lemon wax
2nd & 3rd piece 66 Cryst — next day all Cryst
brief last button washed very filthy Cryst button
very hard, brown

Chrysene Para
Very loose inP — 65°C 66
Extremely Lumpid mix
1st button Cryst splashed together (Can add more)
Comes off dark good fine sinfrom flex by heat
other 66°C flex comes 66 dark — next duke to balloon
in morning 5 buttons Cryst shining — heat bottom flask
Cryst wet Xylene
Paramorphin Ng sticky to brittle

This has the hardest surface of all yet can't scratch with finger nail

Low MP very

Rotem from DCM once cryst from ace
by mod — 1st but cryst slix dark
2nd Gutter fine cut extremely tough-big cut
Gutter slix dark Thin is true of 3 + 4th ?

Nitroanisole & ETOH —
NG

Tribromophenol 1 + 2nd Oleaky
3 + 4th Comes off 6 dark flux
good surface — dark color
Trichlorophenol —

Beta Naphtol mod Low MP, sublimes little
1st Gutter not float — good solvent,
1st 10 min no Cryst —

Phenanthrene (white) –
1st Gallon not flat – Cryst running
Lumped to 2nd Gallon 3rd Lumped – Cryst
Lumpedly as ok with this – 3rd Gallon
mix comes off slippery on round drops
good Solvent –

Nitrophenol Ortho – Low MP
Very Lumped – 10 mm no Cryst –
1st but slants Cry 12 mm – Very thin flat bottle

orthonitroparatoluol Low MP –
Lumped – 10 mm no Cryst

Nitrophenol Para — Rather high MP
Keeps on 1st boiling Crystd yield —

Paranitroacetanilide — too high
MP —

Benzidine — Very Thick = two Crystd

Phenylenediamin Para Basic
MP rather high — Crystd Long thin
1st Crop flat Crystd
2nd Crop Crystd yield — Long thin
Product looks thick —

Phenacetin — MP Lillehaugh
1st Comput gift — Lumpid — on Dec 2nd order —
2nd Comput [illegible] —

Paracetamol — Low MP —
Very Lumped — Have 1st bottle

$C_{10}H_8$ + $8Cl_2$ = $C_{10}H_4Cl_4$ + $4HCl$

128 — 283,6 — 266 — 145,6

,02 — 142

2,56 — ,04

5,68

2,56

266 | 3,24 | ,03

798

266

2 - ,50

1 - ,1

[ITEMS(S) FOUND IN BOOK]

Report of Work
for
Mr. Th. A. Edison.
For the month of June
1911

#6

	Grams	Pounds
Solution of Nickel	856570	1886.3
Sulphate "	209517	461.7
Total amount	1066087	2348

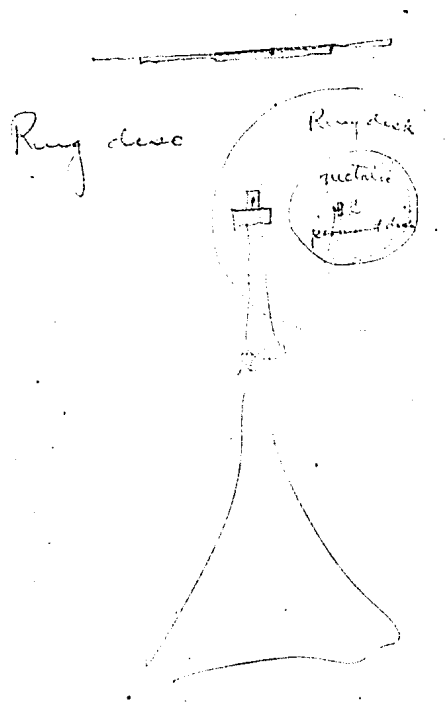
Drums Made Sixteen (16)

21 % KOH + 50 gr Lioh p. L	32
25 " " " 15 " " "	12
21 " " " 2 " " 175 cc	1
Total	52

H. Christensen

Notebook Series -- Notebooks by Edison
Notebook, N-11-00-00.4

This undated notebook was used by Edison, probably during 1911. It contains a single entry, entitled "Ring disc," which consists of a drawing of a disc record, tone arm, and horn attachment. The front cover is marked "Disc." The pages are unnumbered. Only the first page has been used.


Ring dessus
Ring dessous
métallique

Notebook Series -- Notebooks by Edison
Notebook, N-13-00-00.3

This undated notebook was probably used during the period December 1911-January 1912. The entries, which are all by Edison, consist primarily of drawings and calculations relating to phonographs and cylinder phonograph records. Included are drawings of cabinet phonographs with internal horns, machines used to manufacture records, and various recorders and tone arm arrangements, along with rough calculations on the expense, labor, chemicals, and pace of record production. Other entries pertain to storage batteries or consist of calculations and partial sketches with little or no identifying context. Also included is a partial draft of a February 1912 agreement involving the Edison Storage Battery Co., Hartford Electric Light Co., and General Vehicle Co. The inside front cover and first page contain inscriptions by Edison's youngest son, Theodore. The pages are unnumbered, and several have been removed from the front and the center of the book. Approximately 135 pages have been used.

30 Long 22 wide

3'

24

20 000

2.2 30

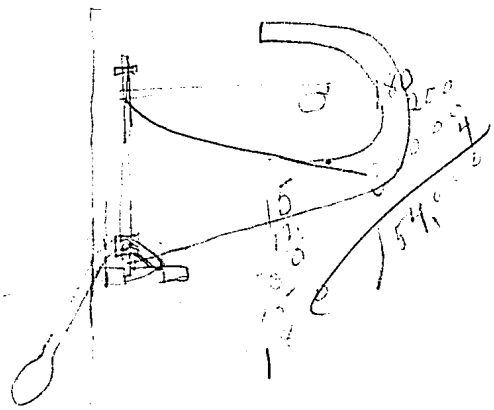
24 1 6 6 6 11 8

3 The long Axis

Llen

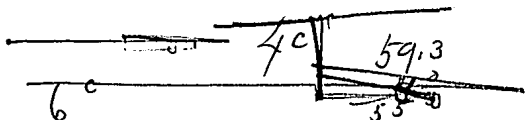
Rome Tile Co.
MFG. STATI ...
69 FU...ON STREET,
NEW YORK.

40613



The family motto- Don't no yet.

My motto- Let George do it.



25
3
34

36
34
70
2.3
7.66 —

7.66 - 7.7

54.3
10
33.3

32
25
5
62 cents -

18
18
62
9 8
3 | 32.7
10.9

10.9 - 11 gent 12 c

25
25
5
5 0

?
~~600 Sold~~ — 28c
~~$~~ 700 made. 196

56c - 700 mill.
800

15
25
75
10
375

4.375 - 800 - at 42.
336
3900 | 56
350
400
4

6c

17 17
900 6
150
3200
400
4

60% Sod Nitrite mixed with Cobalt Chl a week ago - test for KOH. Yellow pp 1 to 1000 -

Try perchlorate K dittos Li in cells then showed Cause not to align quick -

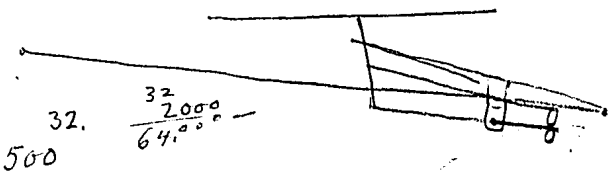
Na Thiosulphate a Bismuthoxalate.
Dissolve in few drops HCl 1 pt Bi Subnitrate say 1/2 gm on other hand 1 to 1 1/4 gl Crystal Thio Na in few cc water 2nd not poured into 1st — say Conc Cl added charge successes this a reagent for KOH. Yellow precip

Fluorosilicate as a reagent

1609
40
0
60
10
4
6
0

1600
56
7
2
9
2

225
16
9
2
5
6
9
6
7
1



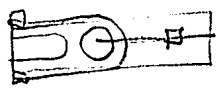
32. 32 2000 / 64.00 —

500

40 ml 1 — 4.00
15 1.50 — 22.00
5 — 2 500 — 12500
250 — 24 — 16 — 1600 — 74.00
4 600
10
32 4 50 000 — 1

2500 / 1 / 1250 — 150 / 1500 / 0

17.
16,8

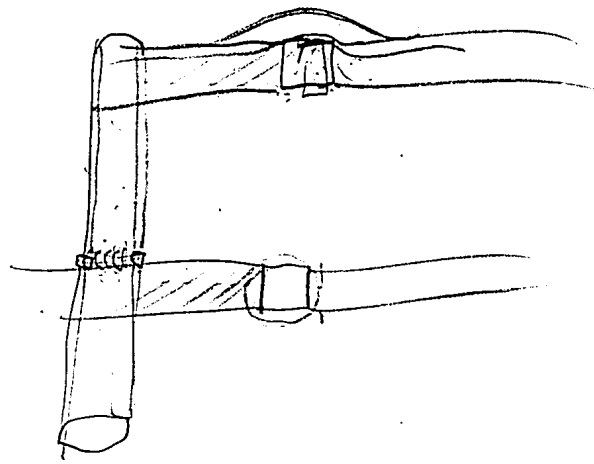


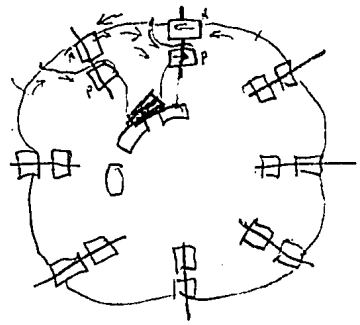
68.

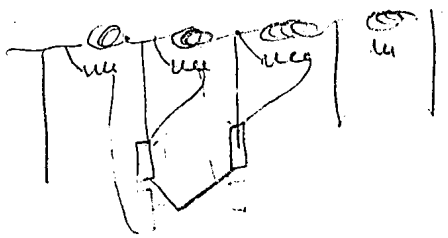
1500 / 15 / 500 / 15.00 / 22 500 — 68 / 74- / 37000 / 340 / 300 / 272 / 54

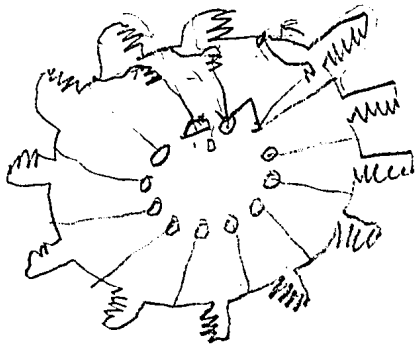
7 / 37 0000 / 528571 / 1

400 / 528 / 1328



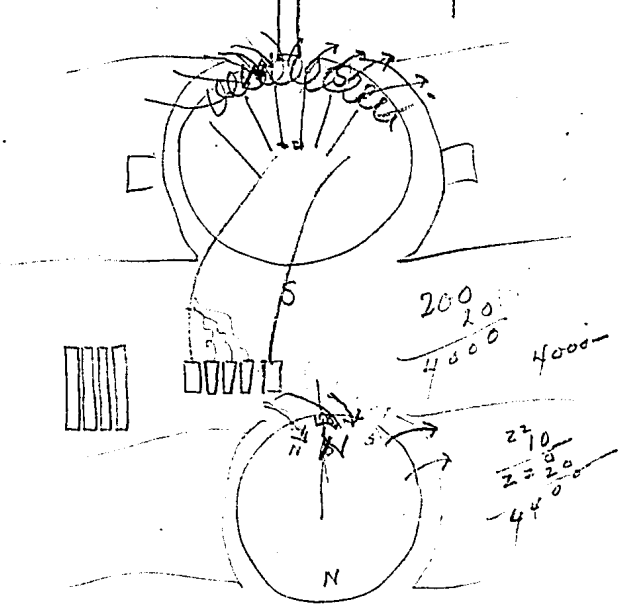






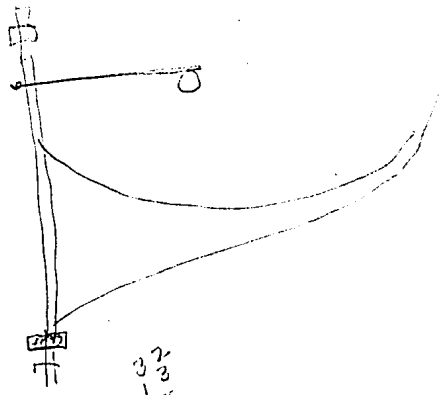
Cut off sales to Mayer & Co at Phila
B & Sons — no authority —

~~Should~~ sell only on A. 60 c mill —
Reduce costs, 56 c - 3 selling



200
20
4000
4000—

2210
220
-44

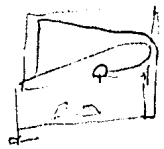


70
38
3 2 48
6
1 2
25
3 2
3
1 3 6
8 3
3
80
30

48000—

3-½ 100
Battery—
Motor, Accessory,
Kinetoscope
Phonograph, Camera, Cyclorama
Miscellaneous—

6 cells



20 — 36
23 1 34.5
22 2 33
21 3 31.50
20 4 30
19 5 28.50
18 6 27

3600 — 1 34.50
2640 2 33

24 | 36 | 165
24
120
120
0

120
24
5
480
120
360

24
150
120
30
15
0

360
150
345
15

110
24
440
440
360
15
345

360
150
345
15

1500
360
1140
1080
60

3600
1350
3450
150

1500
360
1140
1080
60

3600
1350
3450
150

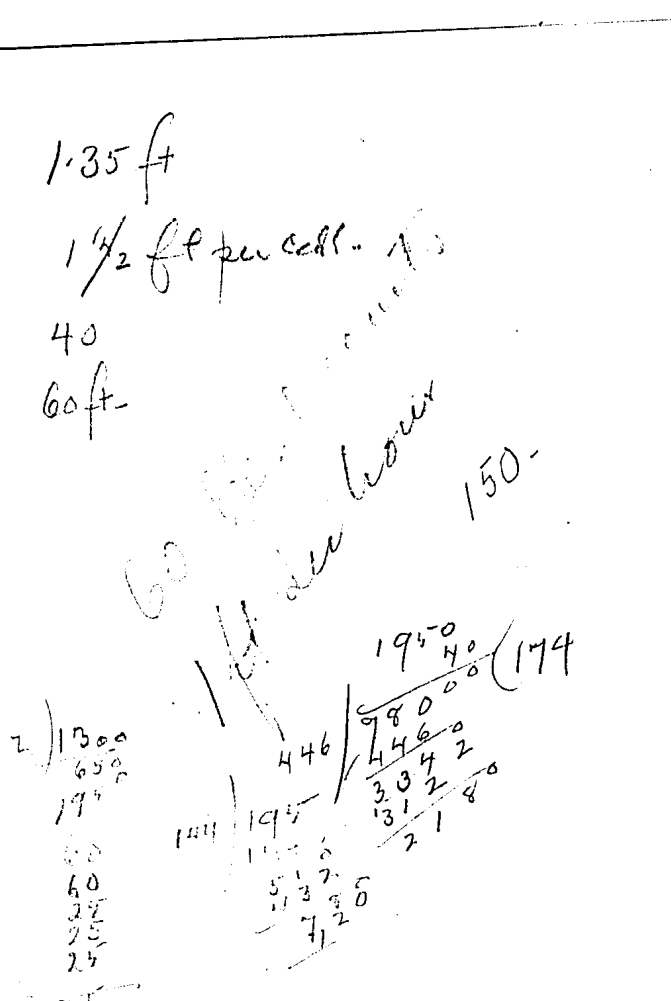
36
315

1.35 ft

1 1/2 ft per call.

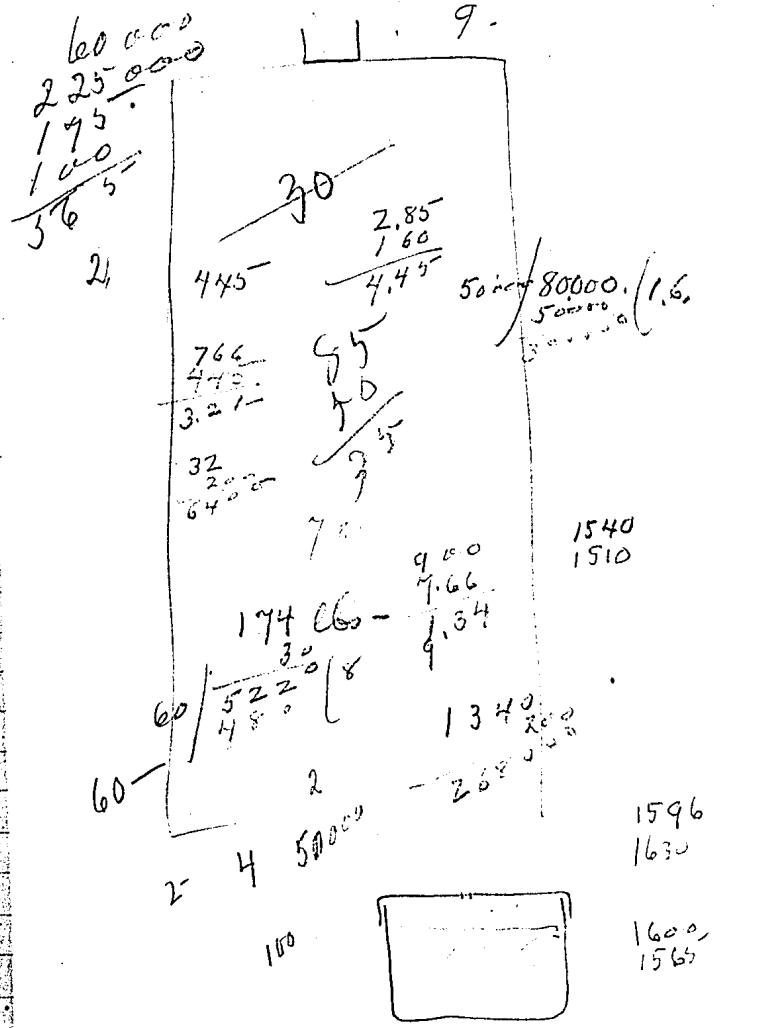
40

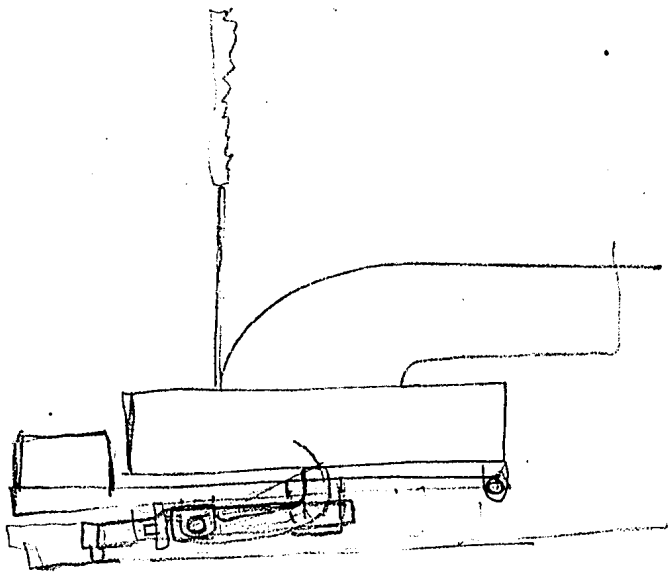
60 ft-



A6 40 Cells 60 ft Head Units

hour





30-watts

6

576 watts/hr

24

16
2
67
3
4
5
6
7
8
9
10
11
12

300
30
900

265 watts
16
1608
268
30 / 8000 / 4240 (

12 / 300 (25
24
6

5 sec

1/2 watt/sec
reading

25 amp 1 min

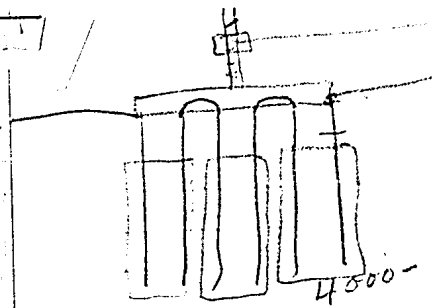
1/2 amp hour

30

4 / 8000

270 dam
81

67
400
268.0



16
6-7
7-1 r
1 9 6 F
7 0 7

10 Volts

& make contract with Hartford Electric Co to sell batteries ~~for rent~~ to the Co from which they are to sell Current ~~for~~ Exclusively for 1 year, providing they use the 6 volt only GVCo trucks —
for City of Hartford only —
to be used in GVCo trucks
at least price from schedule a discount of 15% is to be made for cash, —

8 Cells — 300 amp — 80% ~~Efficiency~~
5 seconds — 25 amp means say 1/2 amp hour — 4 watt hours — each battery.

Requires 1/2 watt per cell — 4 watts put in so 1 second contact would do or 5 sec at 60 amp chg rate.

The Hartford Electric L Co desires to sell Electric trucks in the City of Hartford ~~and to sell Current~~ without the batteries, which reduces the price to the purchasers so low as to make Electric very attractive The Light Co investing Capital in batteries, through dealings with the Electricity, securing the owner of making such an investment and takes up care of batteries.

The

The H E L Co desires to more rapidly introduce Electric trucks into the City of Hartford by relieving the purchaser of the truck from investment in or care or charging of batteries

The Co itself owning & charging the batteries for the owner of the truck by ~~exchange~~ as a means of increasing its sale of Current Edison & the C/V Co are desirous that this method should be tried Edison agrees that he will give the H E L Co the advance rights so far as he can control

the same to purchaser
~~of The same of~~ two batteries to be
owned & operated by the H.E.L.Co in
this manner in the City of Hartford
for a period of two years, and ~~while~~
~~in operation~~, provided they are used
Exclusively in C.V.E.L. trucks, ~~there~~
Reserving to himself the right
to sell batteries to other manufacturers
of trucks to be sold & used in
Hartford where the batteries are
~~Sold~~ with the trucks & changed
& operated by the owner
from his own plant, or from the
agents of the Hartford Elec. L.S.
but not ~~to compete~~ all owners
pleasure vehicles excepted,
The Hartford Vehicle Co agrees with
E Hart that their trucks shall be
designed so that the E.C.M. system
of operation shall be easily
adapted to the E Battery

H E L Co - Has a plan for rapidly introducing the Electric trucks in Hartford —

2 This plan contemplates buying Electric trucks in quantities, ~~at~~ selling the trucks but a small profit,

3rd The batteries for operating the trucks will be bought or owned & operated by H E L Co — exclusively the public of this municipality, or also the Cost of exchanging the batteries — which is only a matter of convenience through small batteries

4th H E L Co as an inducement to take up & equip itself for doing this kind of business & investing in batteries, desires the exclusive right for the E batteries in ... for a period of 3 yrs

5= Except where Trucks complete with batteries are sold to be operated outside limits of the H E L Co or by plants separately operated by the users of the trucks

2,25

32

36-

2250 / 3 / 6750

20 / 160 / 2,66
100
60
40

6750
164
27000
13500
1350000
17950 1/1000

2.66 Rev Sec

6750 - in Rev

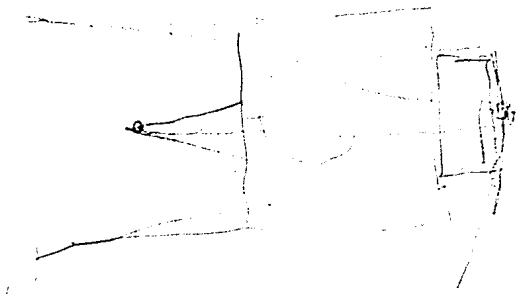
17950 Time length in Second.

MdC - 256 | 17950 / 1792 (70/1000 long

512
1024
2048
4096

35/1000
17.9
8.75
4.35

But in no case where the Generator is operated by a Fuse or Circuit Breaker to the public, in the manner of the Light Co's



2 lbs – 2 | 275 fabric equals 1/4 lb H_2O

1 | 175 deg 1/4 lb H_2O

1/4 deg 1 lb water –

3 lb am —

13 f 1 lb

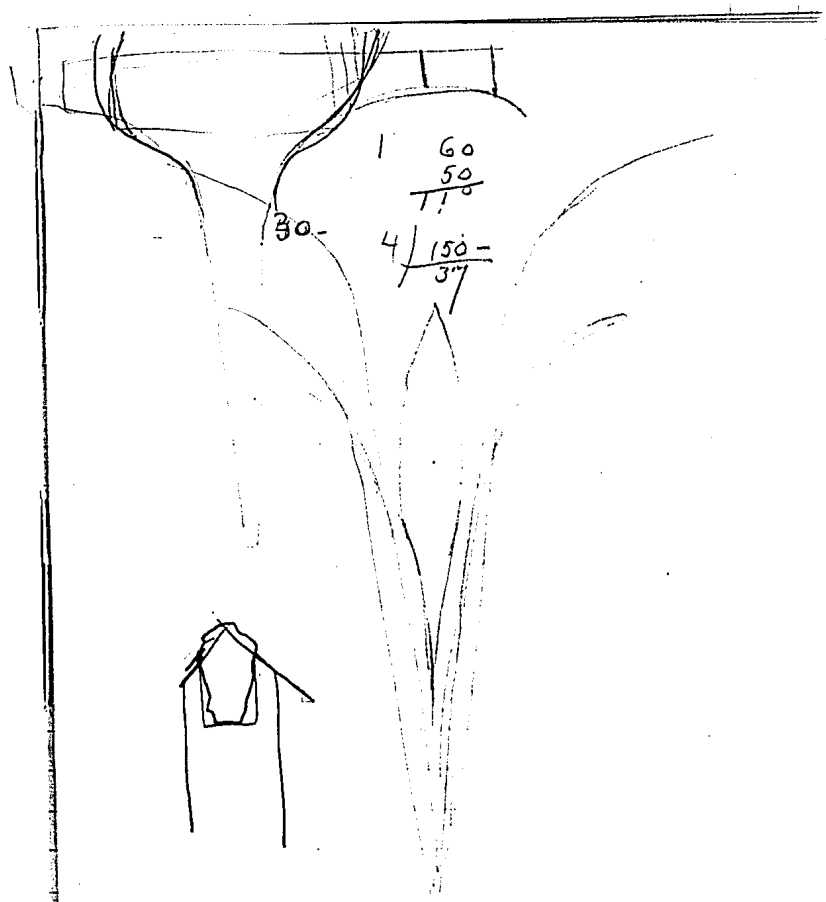
6 | 3

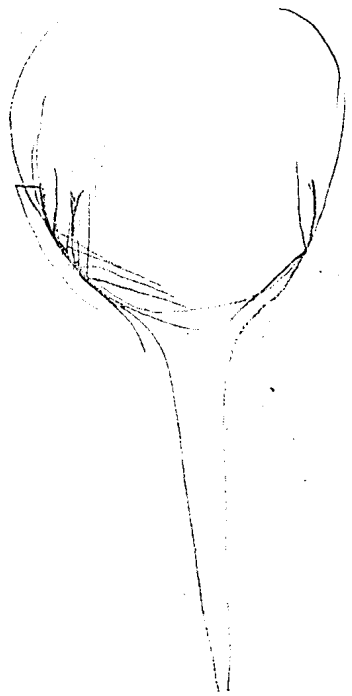
13

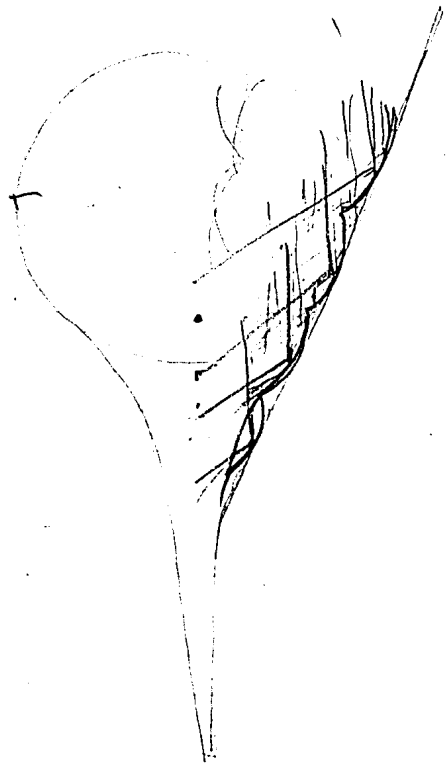
1000 ft min

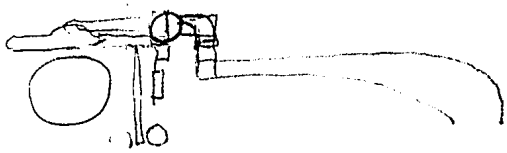
15

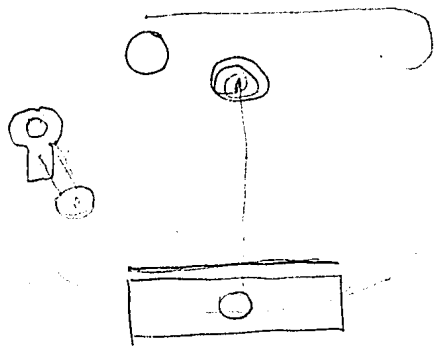
5000 | 70

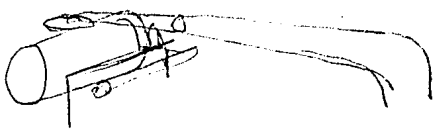


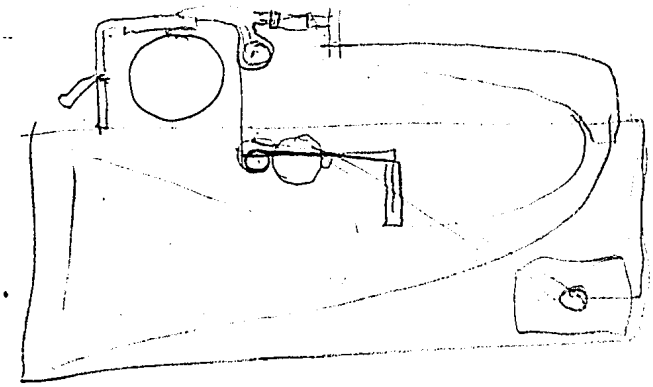


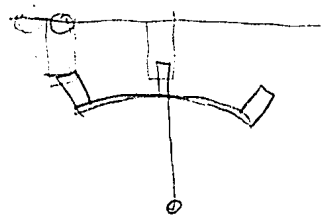






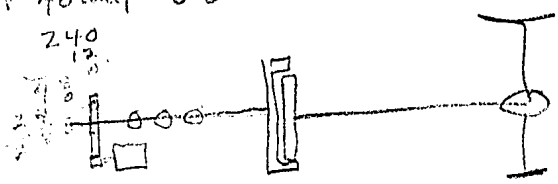






4 | 3804
951

6 V 40 amp. 5 seconds



8" inch - 2" pinion - 4 to 1 — 40 miles 1904
20 950
10 — 476

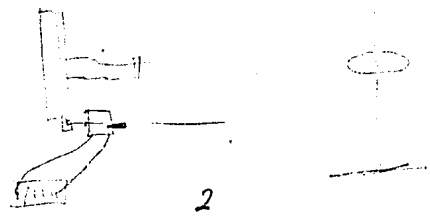
18" 476
120 4
6V 1904

16" 2" pinion 3808 Rev 40 miles
2851 30
1902 20
951 10

2000 ft lbs to start

45
350
220

40 miles 476
20 238
10 # 119 Rev



2

476 Rev —

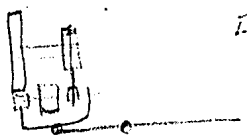
40
5 | 2000
60 | 28571 (476
240
457
420
36

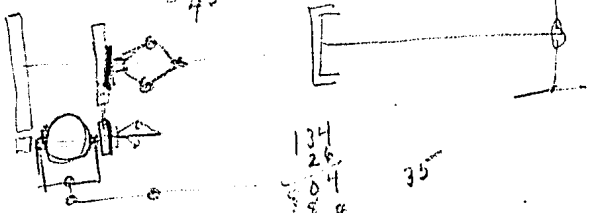
28/3/84

4 | 476
119
3
357

100 [illegible]

[illegible]





Cost 2000 – 10% 200
Repairs – 100
Tires – ~~Current~~ 250
Current, ~~500~~
Wash 150
Driver 750

1950
120
2070

2000
6

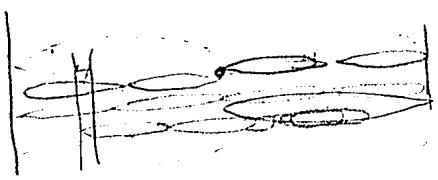
62 16

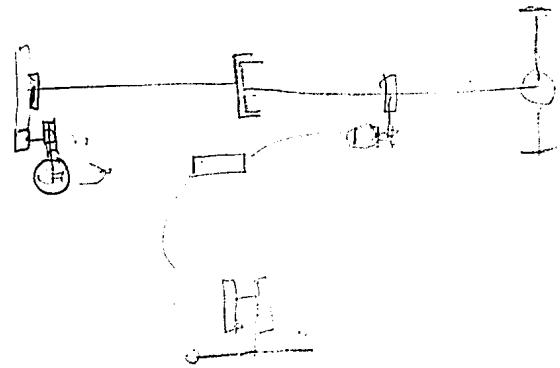
125 8

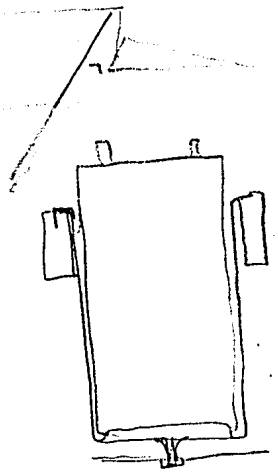
1000 ft. W.D.C. 7.56 ... 4 ft

512 2

1024 1







2450

4-

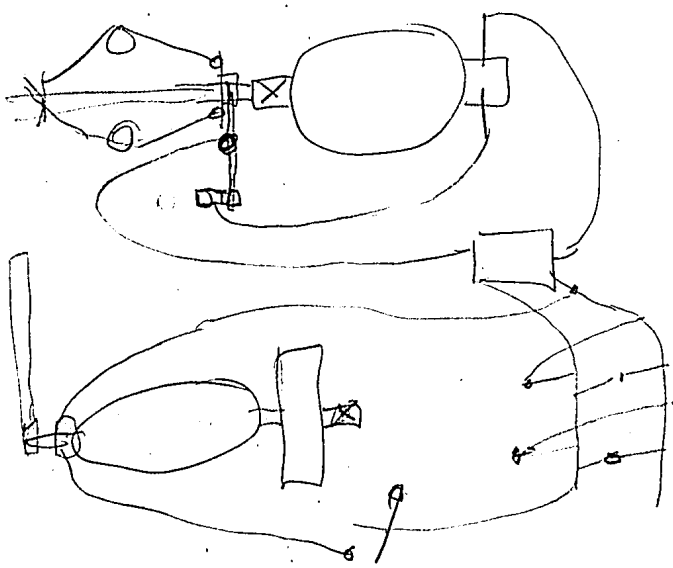
15

30

125-
50
25
25
50
275

10 cells

1080
108 - 44
54 - 134
29 - 132



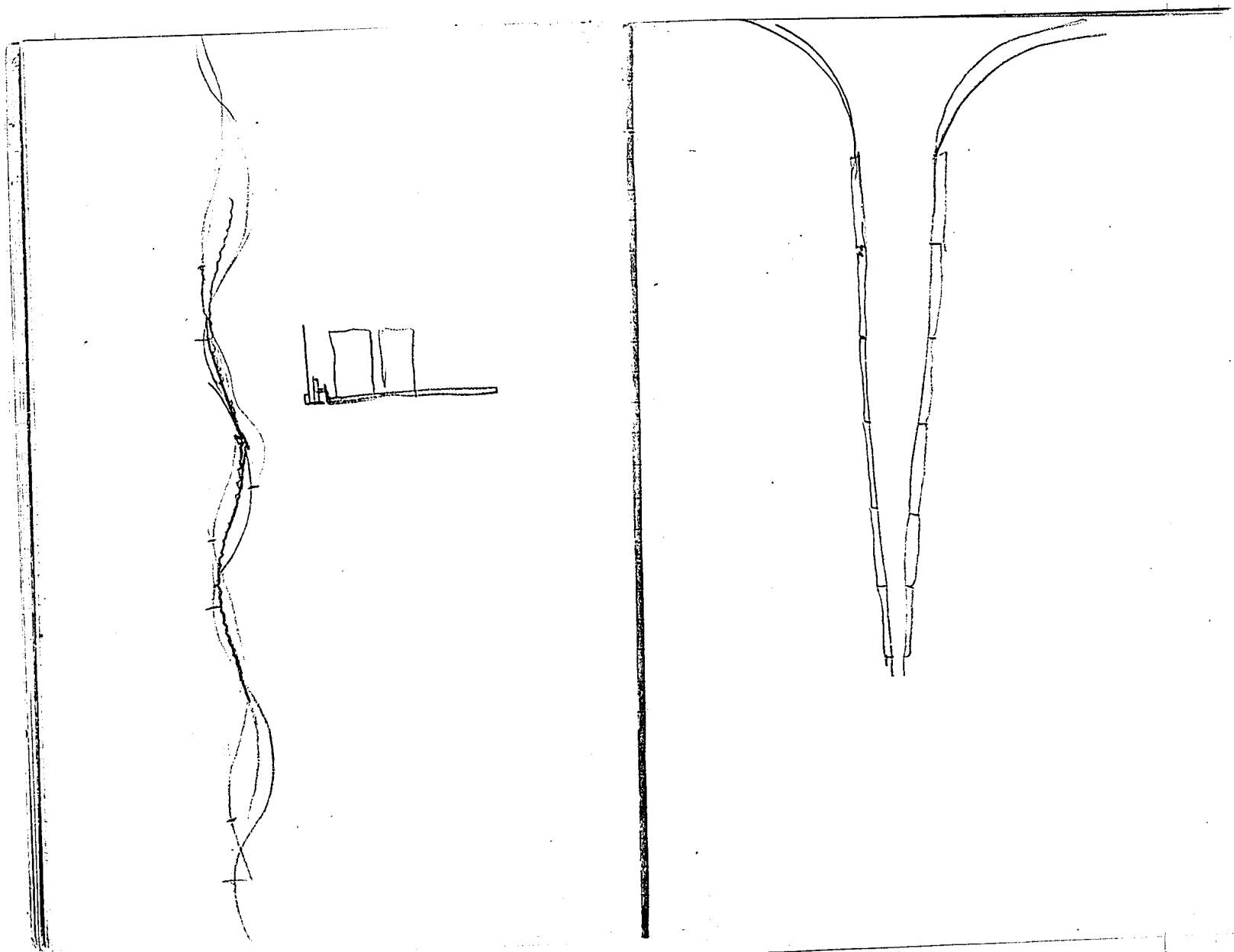
Naphthalene —
Alcohol + Chalk —
" Camphor
" Japan wax
" Soda - Caustic -

50 1lb 300/
50 54 lbs

9 | 5400 — yards — 1000
600

15 30 3rds
9 | 6.60

300 | 20000
18000



10" 2 To 1 —

100

80 Cubic Feet Weather —
8000 To 100 Pounds
4000 Lbs —
Future 2666 Lbs —

27000 —
13000
160 00

1333 10
133 3

3 | 4000
1333
2666

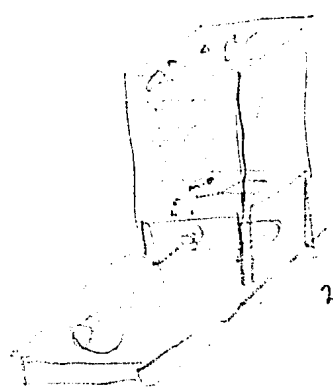
160 Ft

144 | 8000 (55 ft —
720
80

160

144 | 5 00

3 1/2 tons month



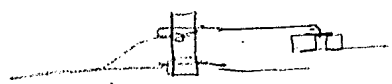
1100
35
5500
385
3850
314
26
48
4 d 9
2600
700
64
11
2000

446 | 140000 (314
1338
360
324
17

1000
8
1.04 - 7

1.03
1.C
14
64
7

7
17
24



144 | 160 (1.1
144
160

80 inch ½ cc | 160 lb
1 1/10 ft | 1 lb - 4c ft -

10
3
50

40. 1000 ft.

45

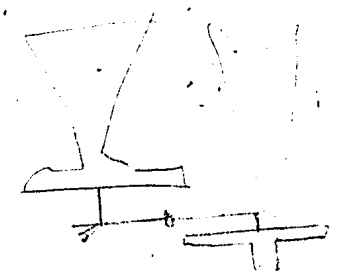
26
5000
130

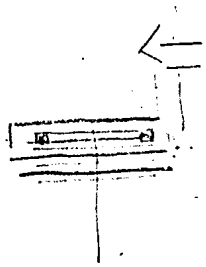
32
3

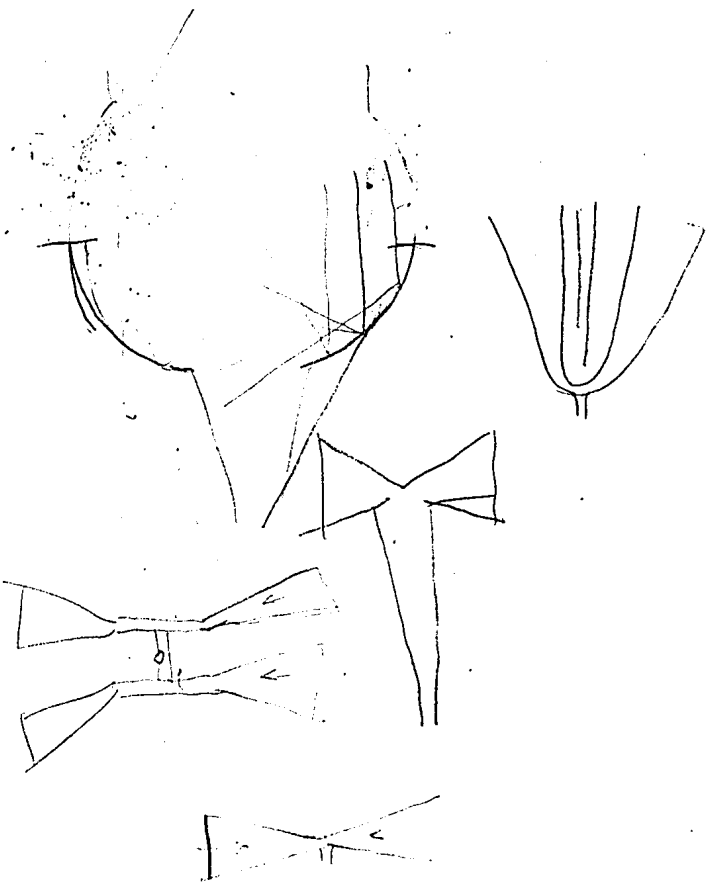
800 -

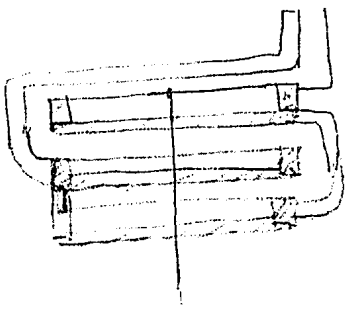
446 | 8000 (3568
3568
12000 | 35600 (3 months -

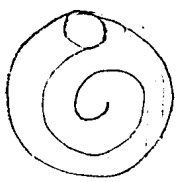
100 | 35680
3200
3480
3200
2800
2800
2800

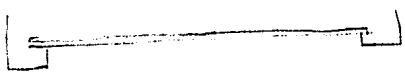


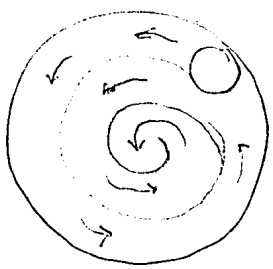


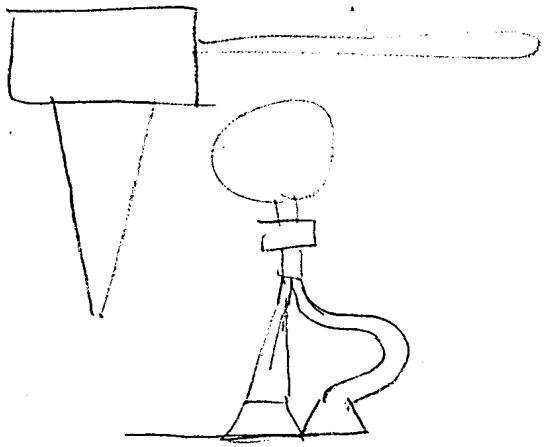


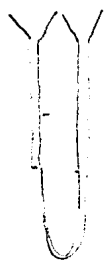




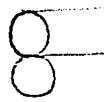








1000 V. 6 rotations. 1 ft –



2 ft sec

1000 vibrations sec funnel 1 ft 1" long

Recorded

Double funnel 1 of 1ft

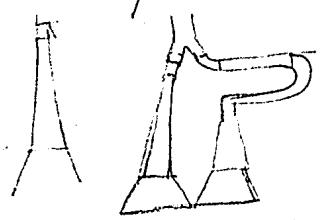
1 of 1½

50 mm / 110000 ft 2

11.160 – 16 / 96

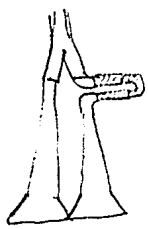
3

16 / 96 / 11 / 96 / 96 / 700 6



30 inches

50000 / 30 / 1.500 / 1/20 / 1/40

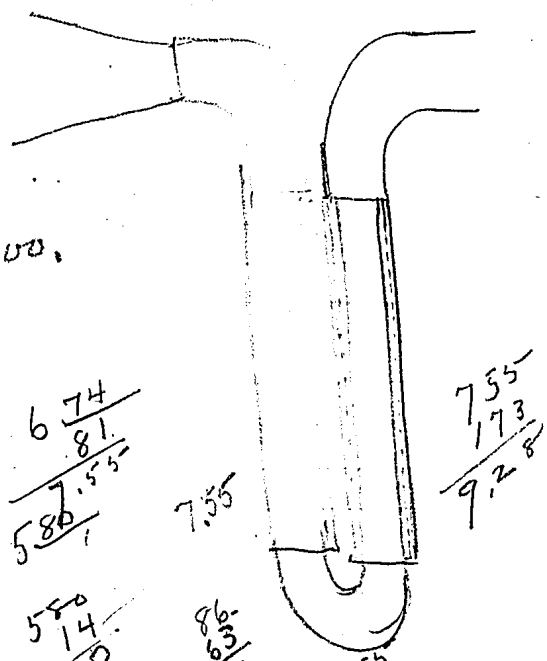


37 melon seeds

40 / 1 500 grams (37 cc / 1 200 / 300 / 250

37000 / 1" / 37000

100.



564 / 6 74 / 81 / 7.55 / 586 / 1

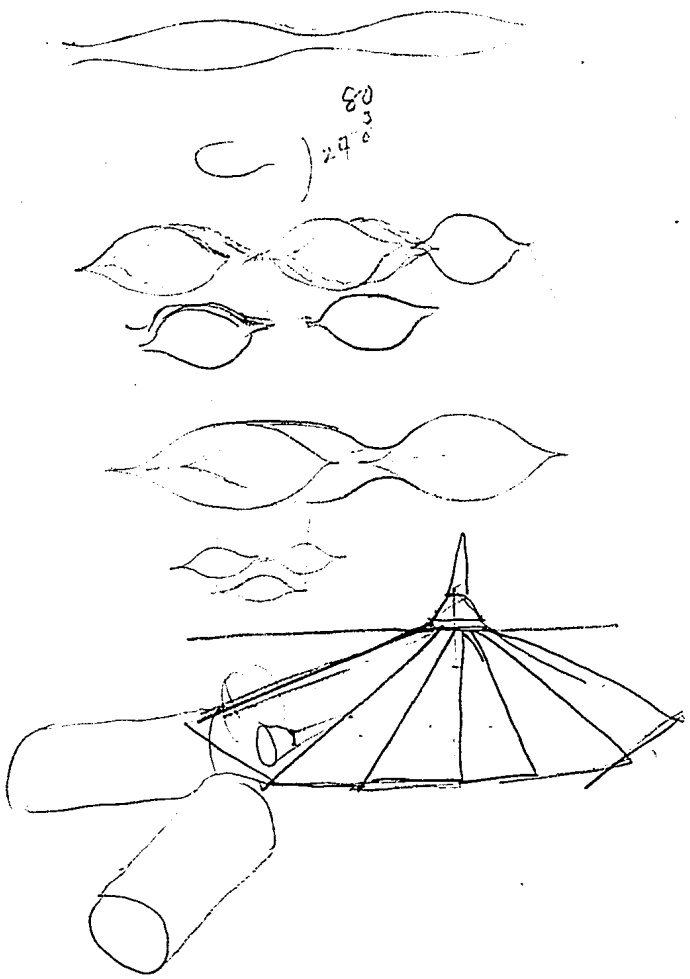
7.55

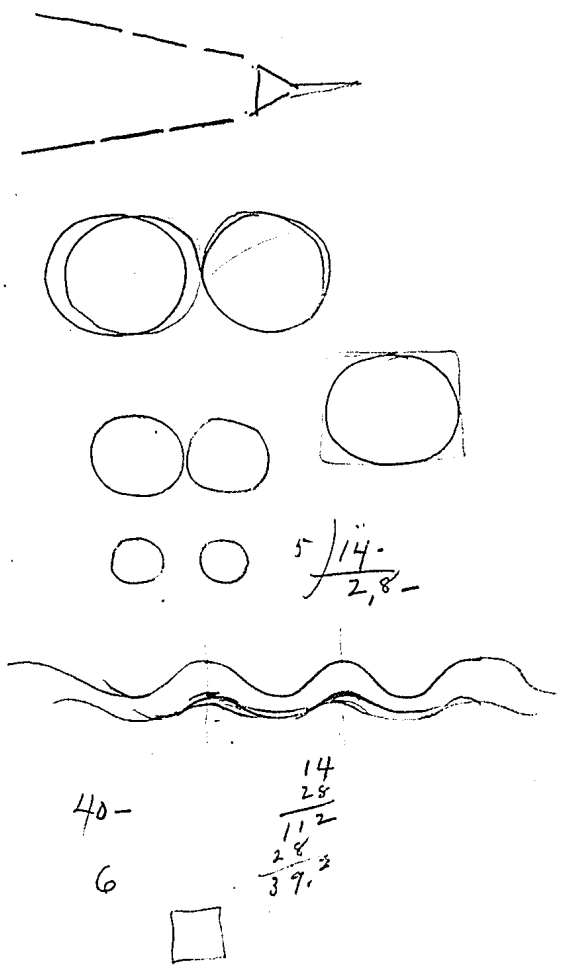
550 / 14 / 23 20 / 514.0 / 8 11

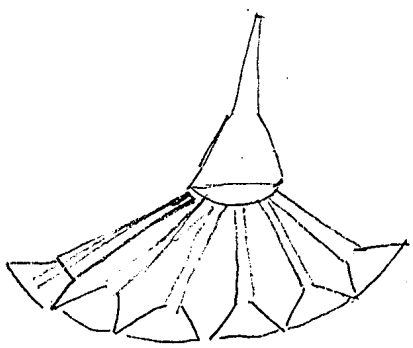
86 / 63 / 23

7.55 / 23 / 226 / 1510 / 7 30.

7.55 / 173 / 9.28


80
3
27°


5
14.
2,8-
14
28
112
28
39,2
40-
6



50-

1 gm. 3 v
3w

446
5
2230

2.

2 c

.6-

1.50 15 2000-
3000-

60

50
60
-18
25
50
40
60

13750
5000
1875
1500
3750
3750
0

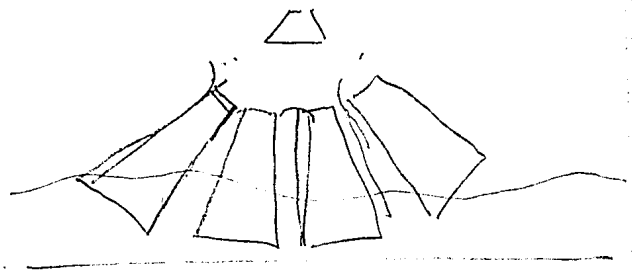
(375

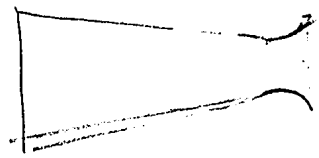
2.

50 | 1875
200.
150.
1

275
500

4 | 1375
3435





15

8

80000 / 1200

45

6 | 90000 / 11250

300 | 12000 / 1200 (40

60 watts ton mile –

800 Tons train –

10 Trips single daily – 8000 Ton 80000 ton mi

120 watts Ton mile input,

9600 KWH 1 cent

	$ 96.00
Engr	5 00
asst	3 00
Batteries man	6 00
2 helpers 8 yrs – $12000 yr	40.00 –
Plant –	15 00
	165 00

$ 165 per day

2 mils per ton mile –

80000 / 165000 / 2

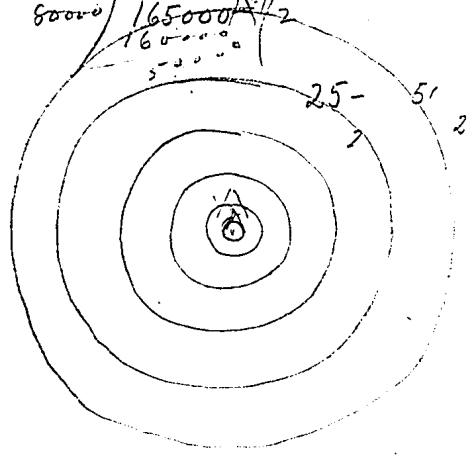
160000

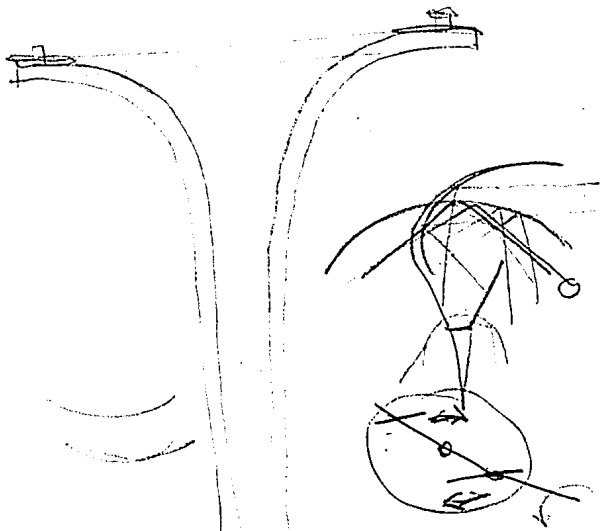
5000

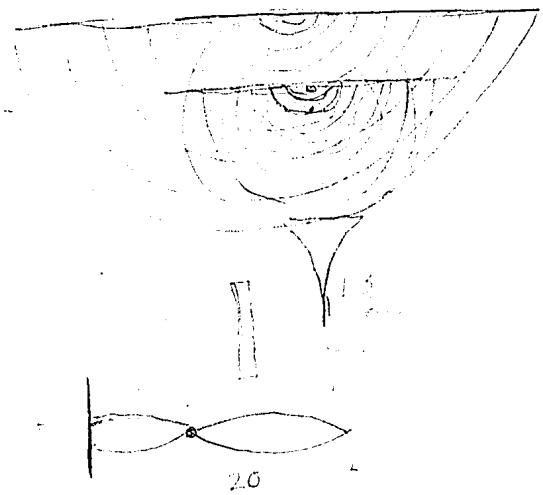
25 – 5

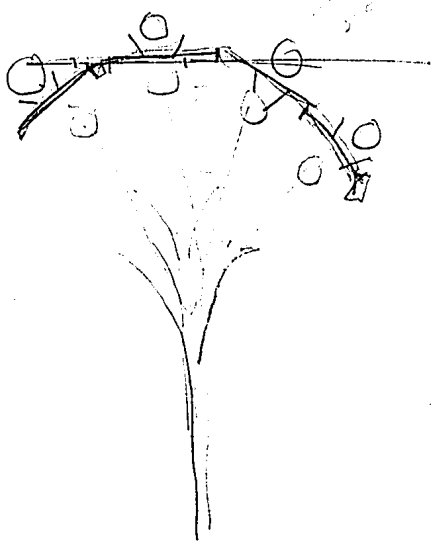
1

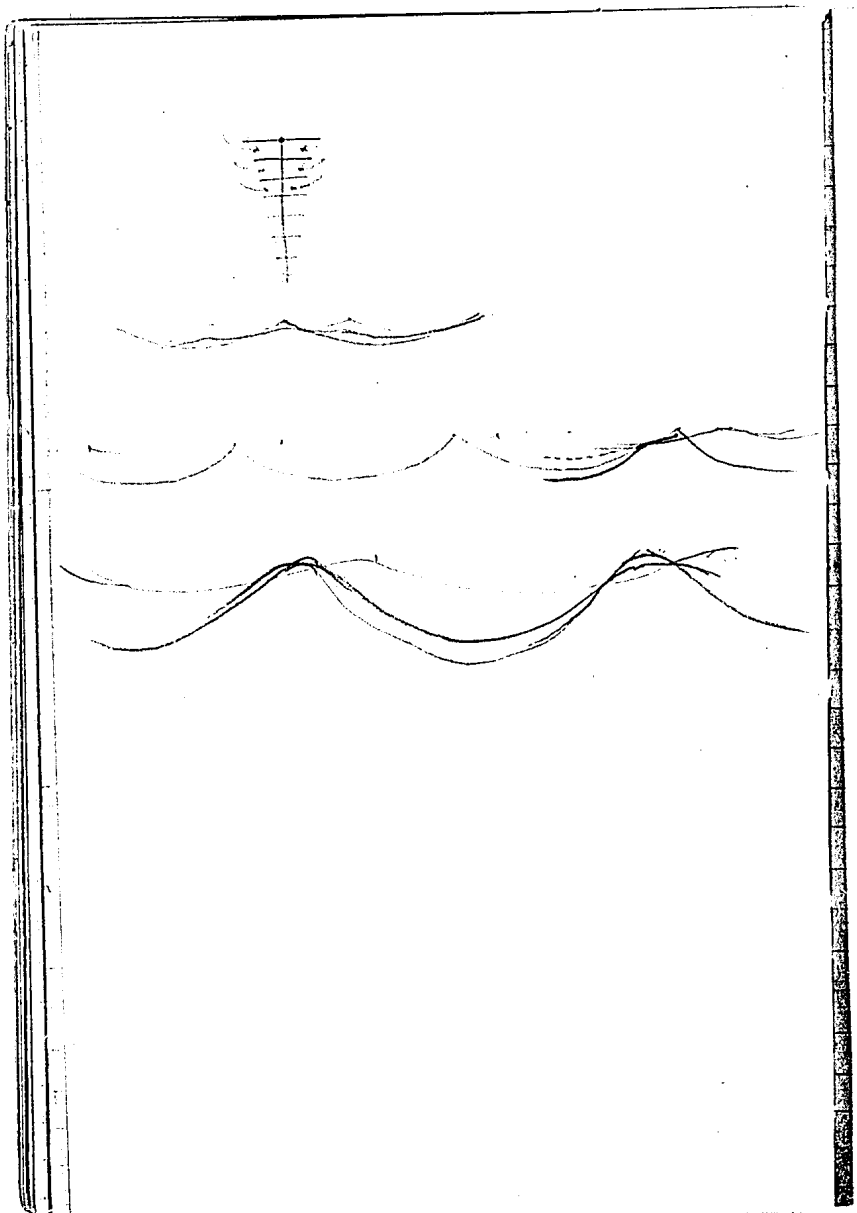
2500 –






20
15





7½	6	5	4%
16	14	10	8
30	24	18	15
40	32	24	20
50	40	30	25
60	48	34	30

5000 — 375 — 4,625 —

150 —

2000

200 — 75 — 1,25

5000 — 75 — 25000 — 3750 — 375

2

1,50

5 | 375 — 75 — 1850 —

1350 — 75 — 675 — 945 — 1012,5

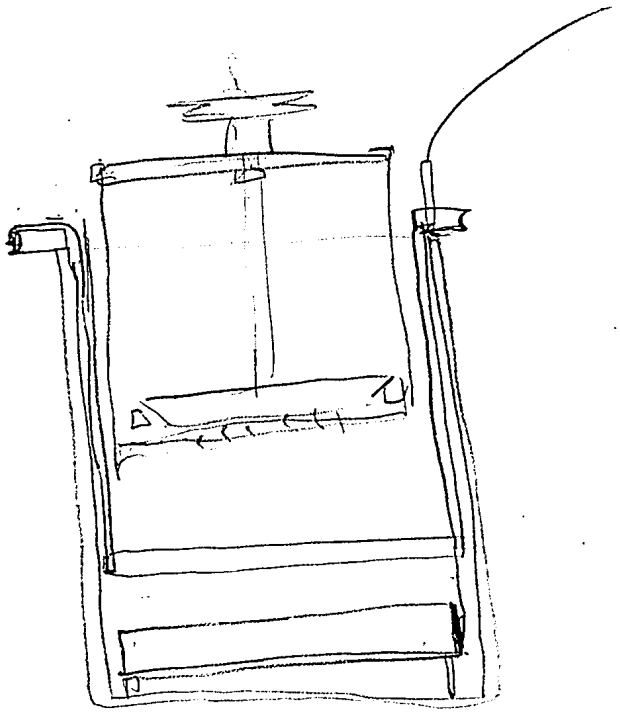
150 —

150

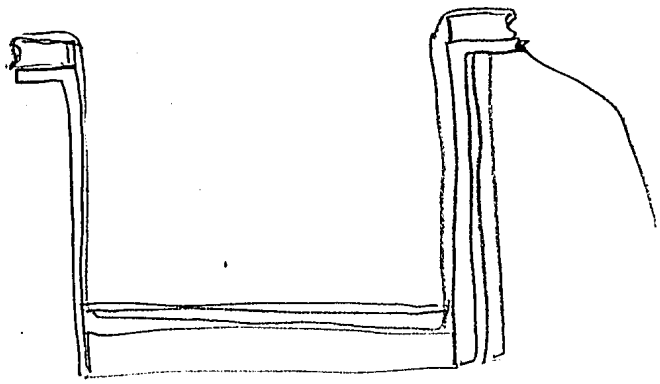
2000 — 75

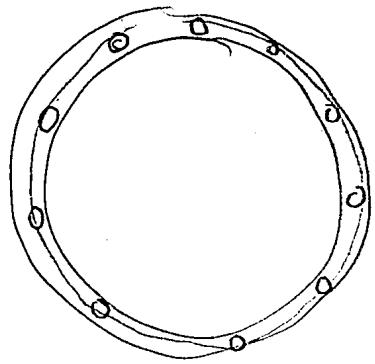
1350 — 101 — 1249

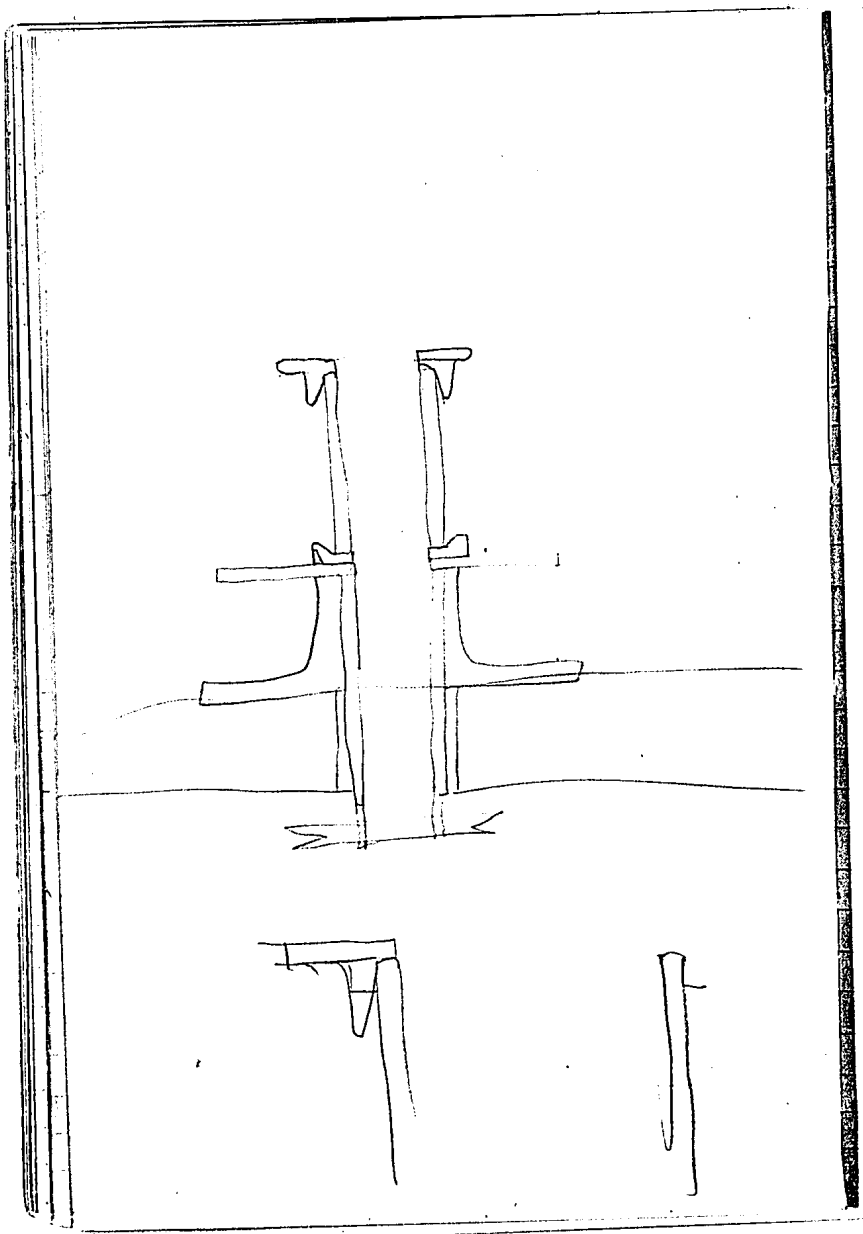
1249 — 1080 — 169 —

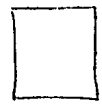


16 14 12 10
30

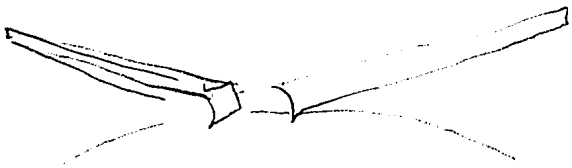


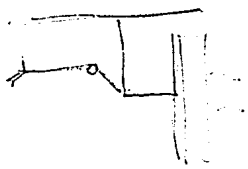


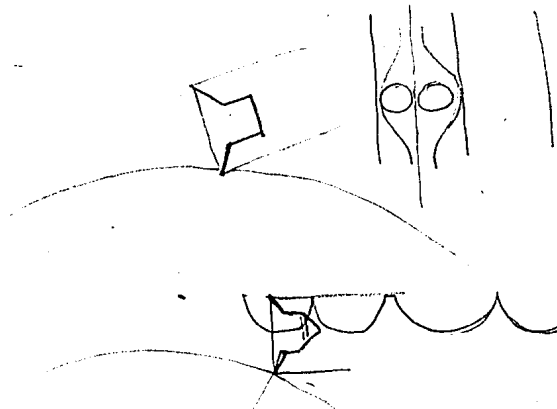


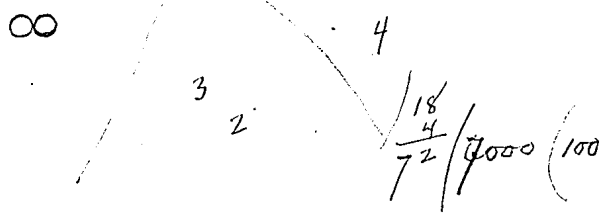


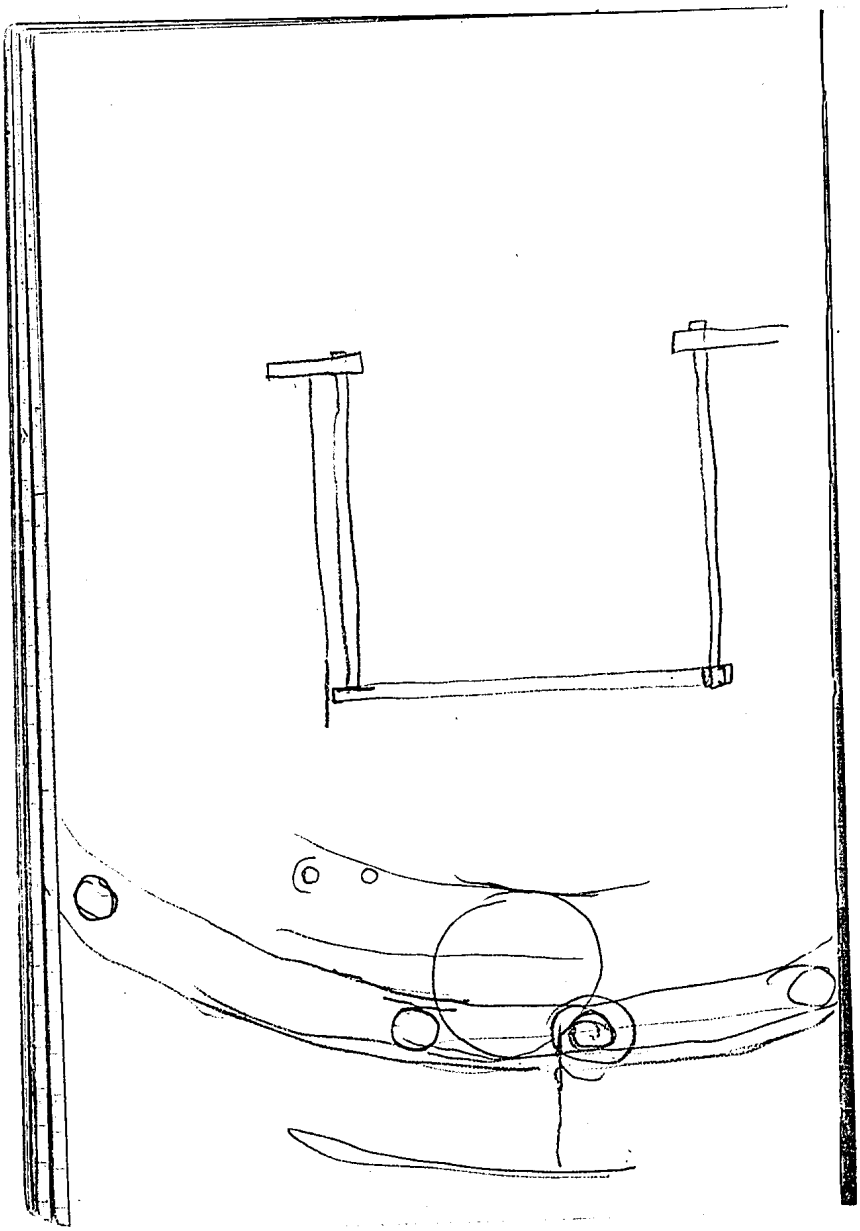

Red
Blue
grey
Red
grey
Red
Blue

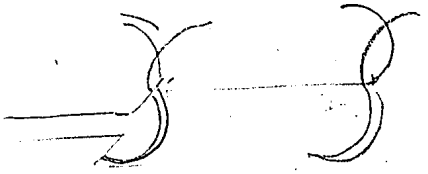


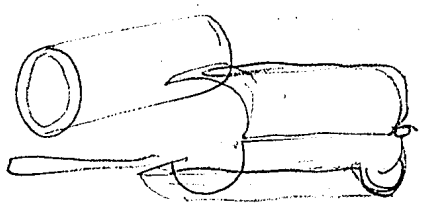


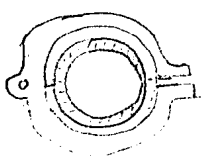


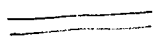

∞
4
3
2
18
4
72
9000
100

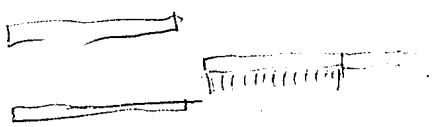


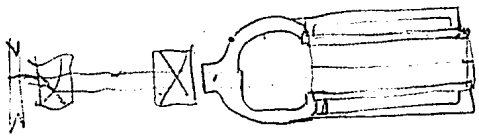












A 1 pm 6— 112 deliver 119 deliver 66
B 106—6— 118 deliver ~~x~~ 125 for press

2
2
1
6

6 — 12— min — 8 minutes

A press X group In 1 pm out 112 — X — Ready 118

B press Z group in 106 out 118 — Z — Ready 124

X A pm — 118 — in out 1.30, x Ready 1.36,

10

14 moulds 2 presses 10 girls — 396 Rounds
2 presses 10 hours

28 — 792
42 1188

18 min Rounds 2 press 33 Rounds
19⅘ Rounds

14 moulds, 2 presses — 396.

18 / 600 (33
54
60
54
6

12 10.

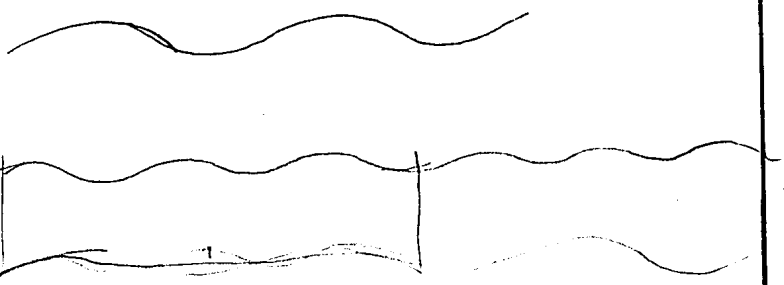
100 000 —
300 000 90.
250 000 —
27
8c
90

190
40
150

8000
40000 —
200000
9
1800

Advance the money = under a Contract whereby the buildings & machinery is put up as security for the advance. Mfr on 10% basis, & pay 5% on money & as fast as bottles delivered we credit the 10% on the from the advance till paid. Should anything occur he cannot take. Then to settle on we are to pay 10% the account from profits —

3% 30 grams each
5 30.
8 35
12 7



86
3
258

3

61
3
83

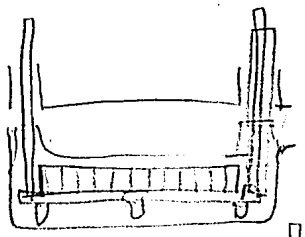
144
2.1
144
288
7029

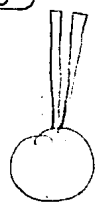
14
3
4.2

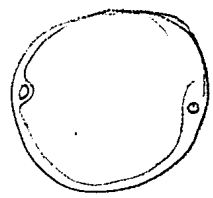
36.
86
216
288
30.9

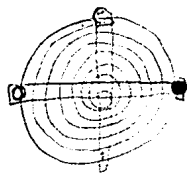
2.58 3%

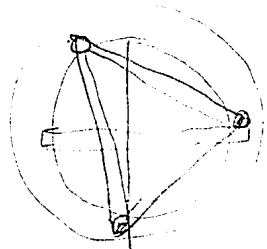
96
37
672
288
35.5

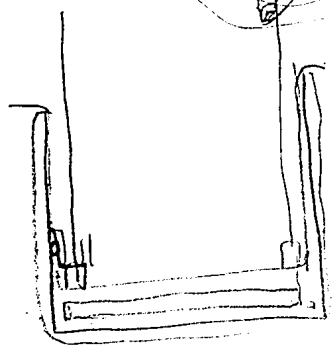


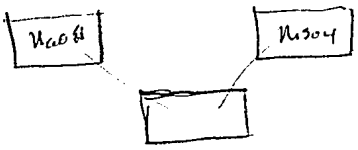


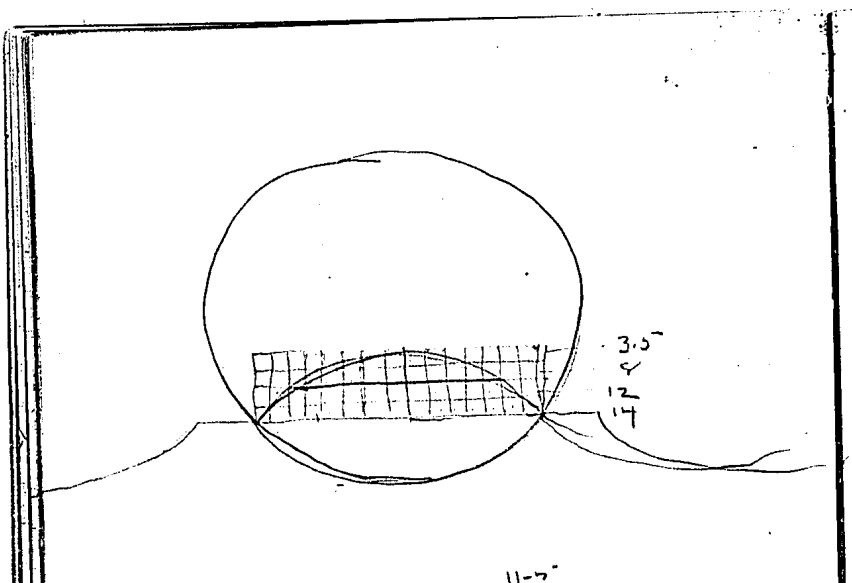


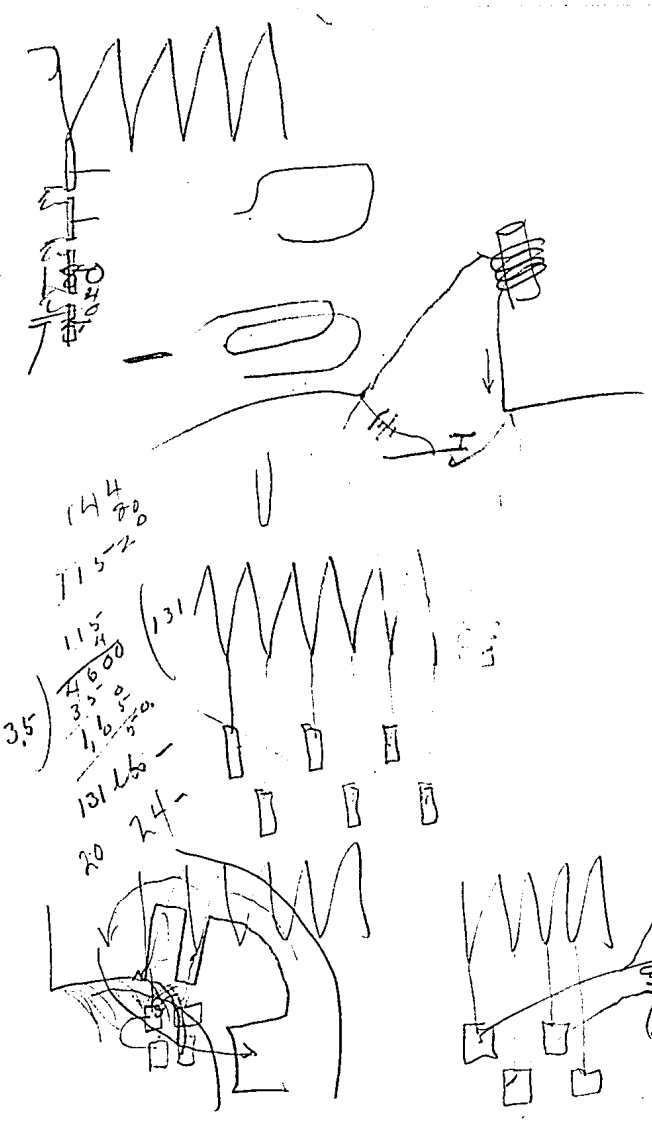


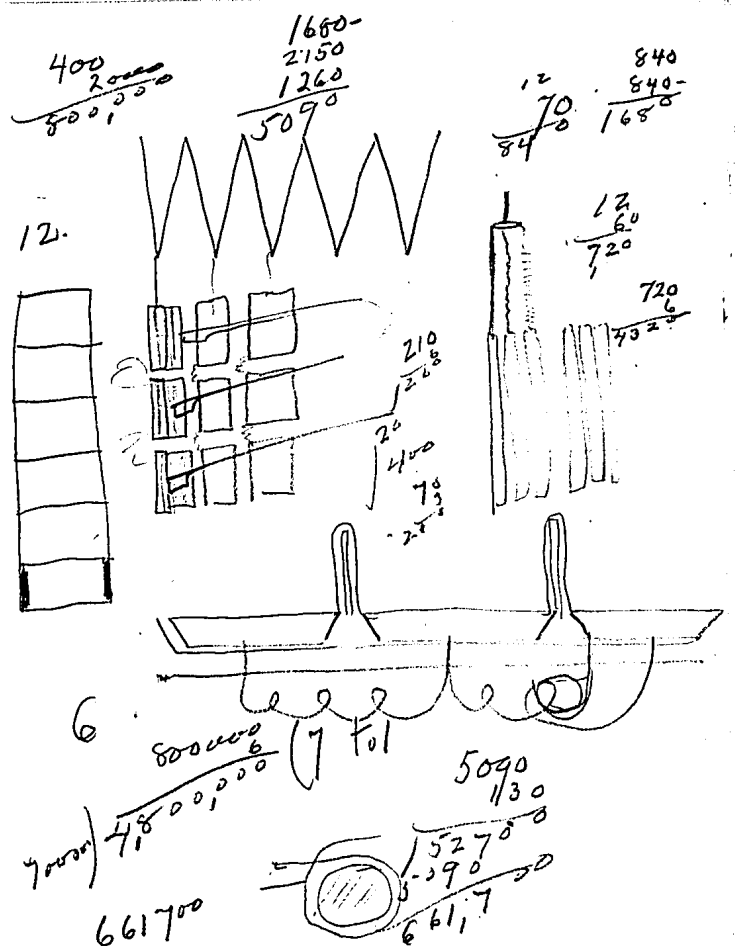


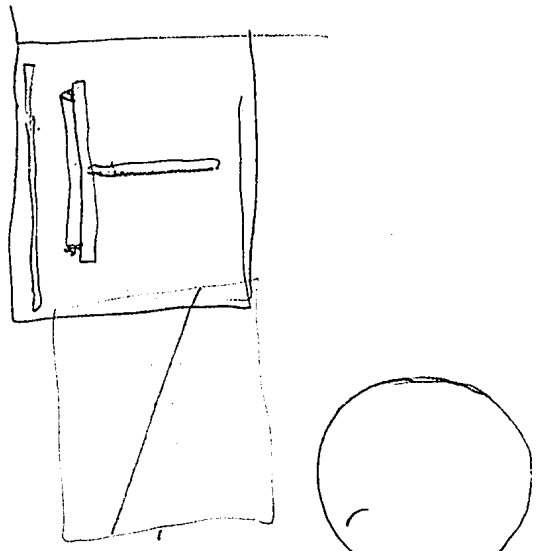


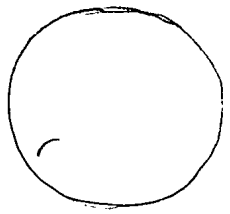

Имя
Пизда

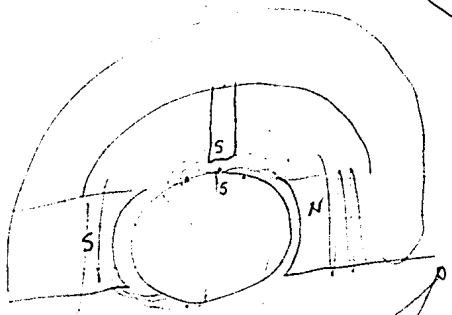

3.5"
12
14
11-7"

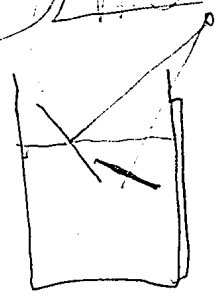










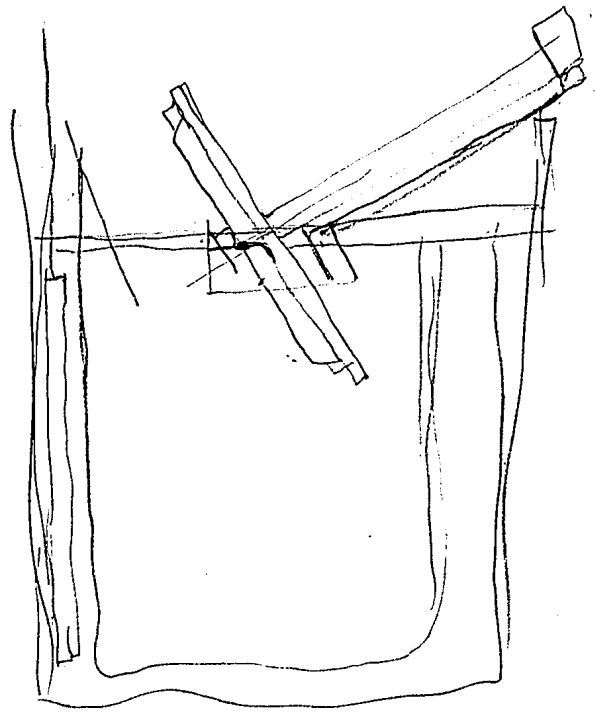


23.

39
23
62

111

9



Mill —

Paper 8
Cresol — 24
Varnish — 28
50

	Mill —
Material for Blank	50
Labour for mix	7
Pressing & Curing, + Unloading	17
Flowing + Grading + Loading	15
Transferring	5
Trucking + Unpacking	3
Round pressing	6
Cleaning	9
Inspecting + Testing	4
Edging twice	4
Numbering	1
Transfers	12
Water + steam	13
grinds —	6
Granuid	10
Supplies	
	170

Steam — 40.

15

2 / 15 / 11

5 | 330 — 250, 15 — 66 grms Cresol
66 — 125 — 0
4 — 150 — 0
264 — 3744

.8 Cloth for fibre

63 | 150 (2.4
126
24

1.3 / 6 / 8. / 7 | 70 | 446 (6,3
420
26

Cresol 3 Cresol men
3 Alcohol reservoir
2 fabric screen
2 Varnish
4 grinds —
4 Extra
20

Boom — 12 / 40 / 48 / 450

6000 | 35000

12000 — 42000 | 450 | 2000 (4

30000

17 5 / 2 8 / 3 5 0

50 Rounds —

500

8 — 10000 — 3 5 0 / 2

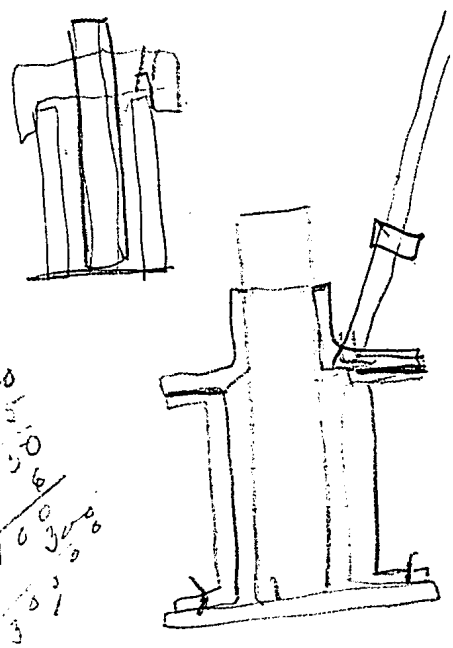
250, | 350 / 250 / 100 (1.4

500

250,

Baking

600 | 2000



150- 150 / 1,250 (8

100-

1 m

500- / 1250

6000 / 60,000 (10

15 2 3/5

(4

137 5- 6000 / 73000 (12

275- 60000

4125-

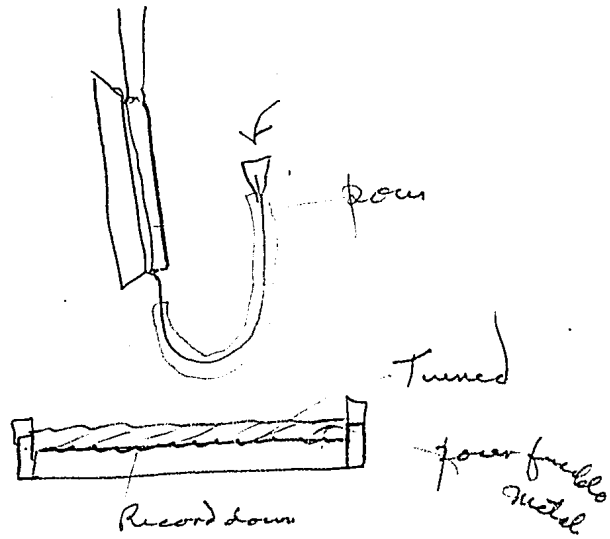
4800

1900

8000

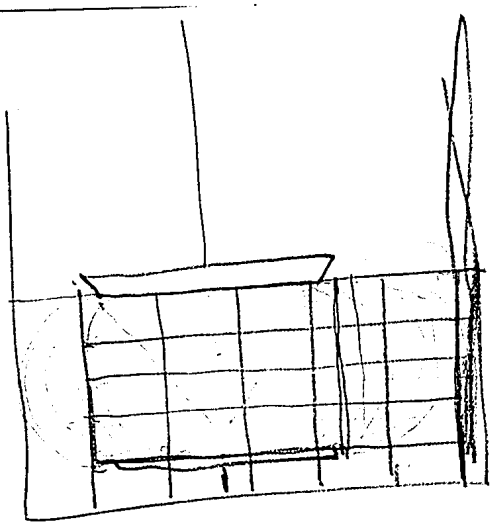
5000

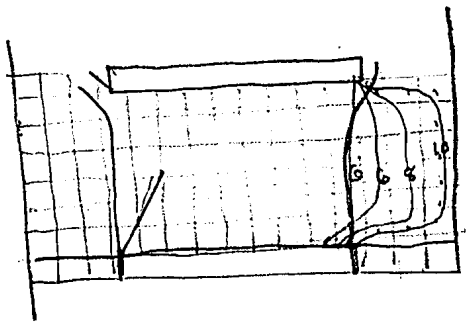
73



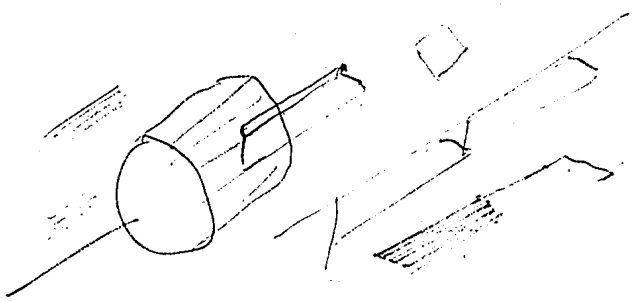
7 5
4 5
3 7 5
3 3 0
3 3 1 4

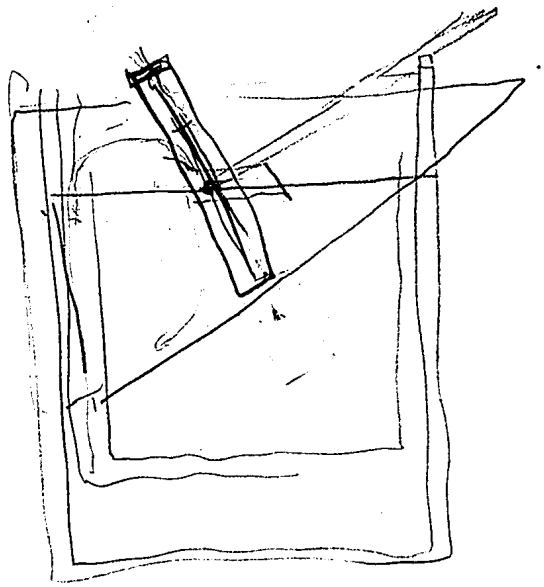
34"
3400 lbs



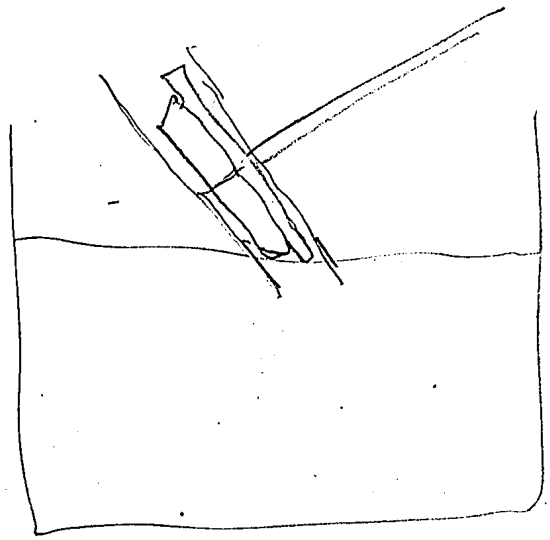


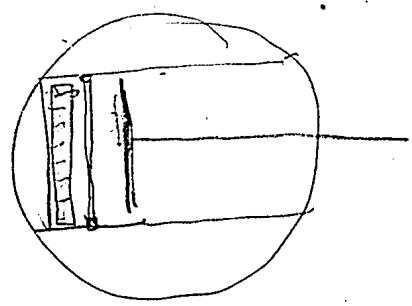
5

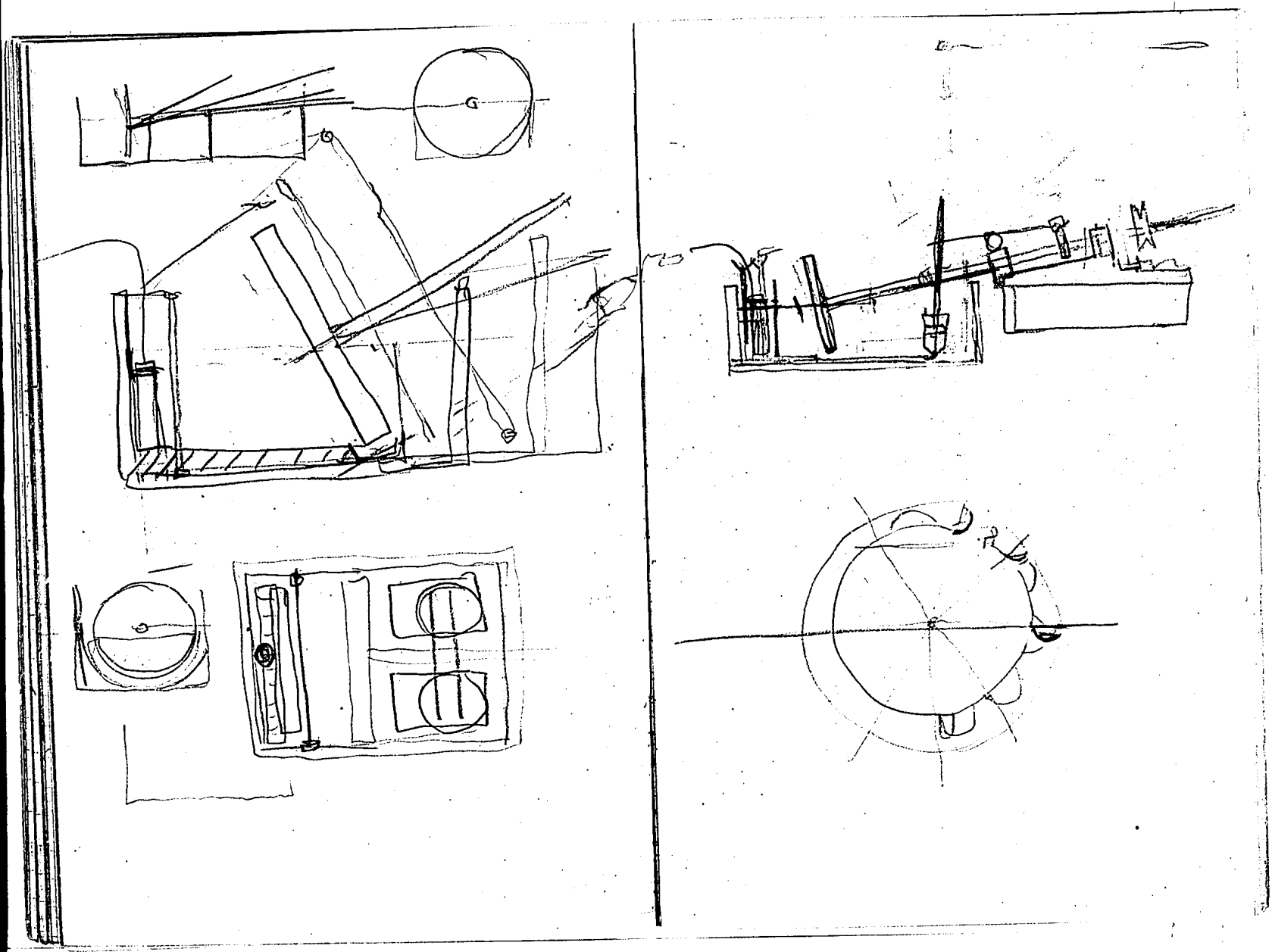


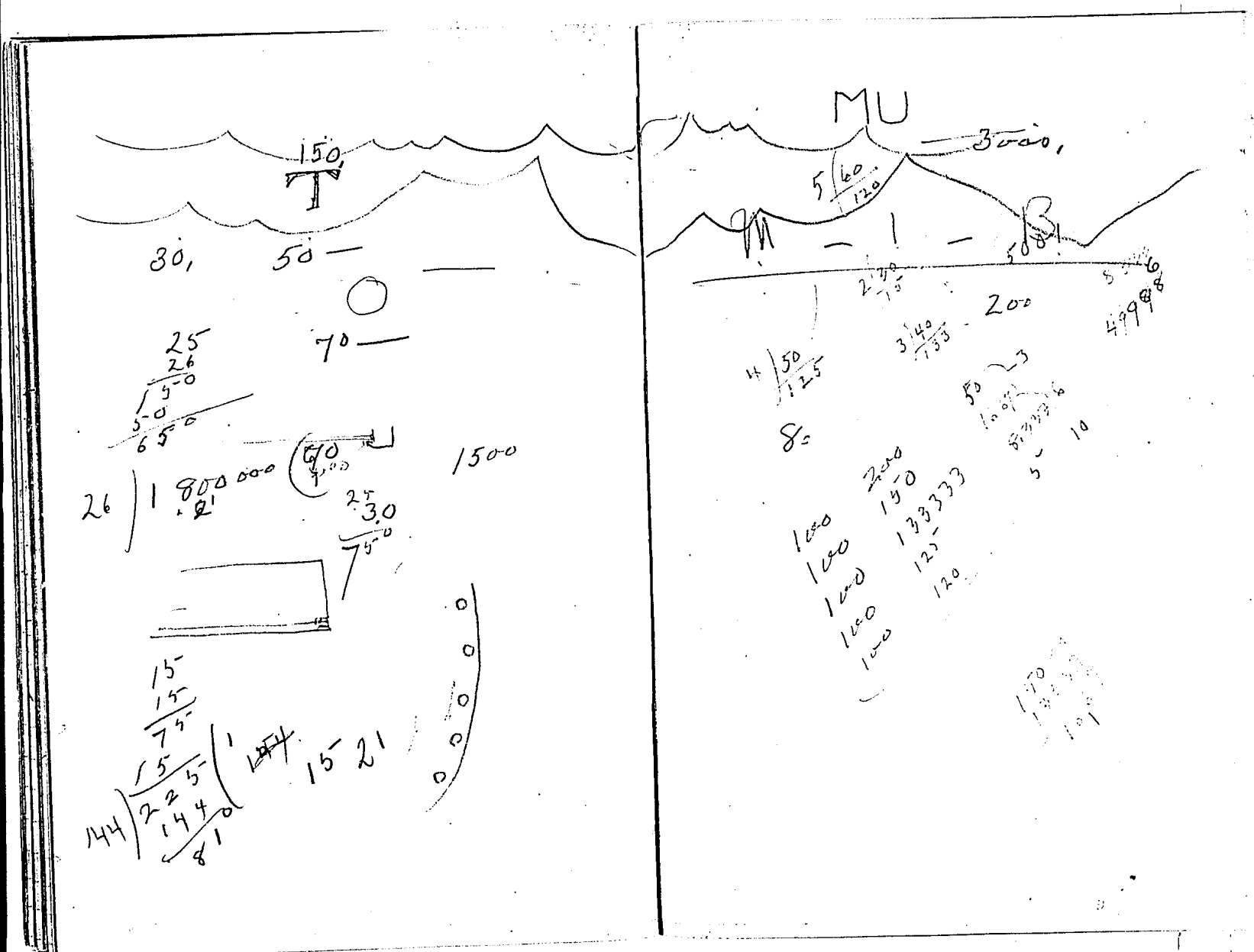


8 40 5.
30°








MU
150
T
30'
50'
70'
25
26
5-0
5-0
65-0
26 | 1 800 000
1500
25
3.0
7 5-0
15
15
7 5
15
22 5
144 | 2 144
8 1
15 21
5 | 60
120
3 | 40
133
200
14 | 50
125
8
1000
1000
1000
1000
1000
2400
150
133333
125
120
50
10
5

15
50
7 50

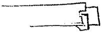
7.50 200
7500
52
300
7500
78

750
5
375

3750
52

3000

750
187500
195



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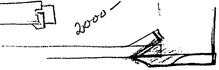
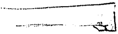
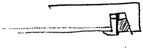
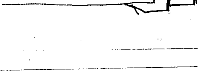
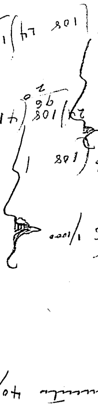


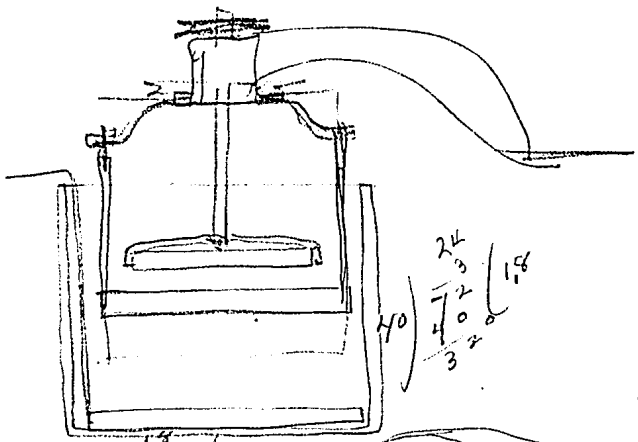






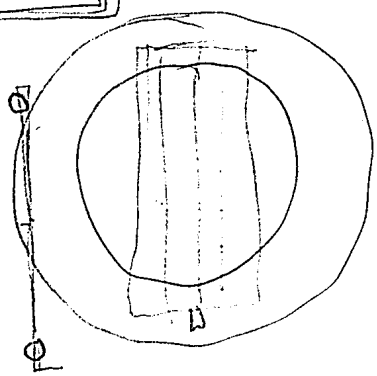


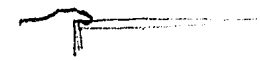
72
60
432

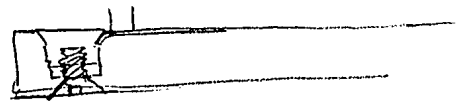


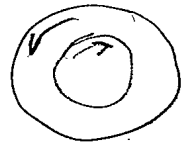
40) 72 (1.8
2.5
72
40
320

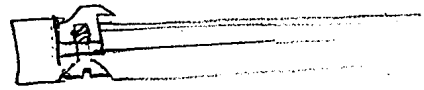
60) 108 (1.8
60
480







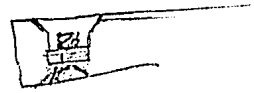


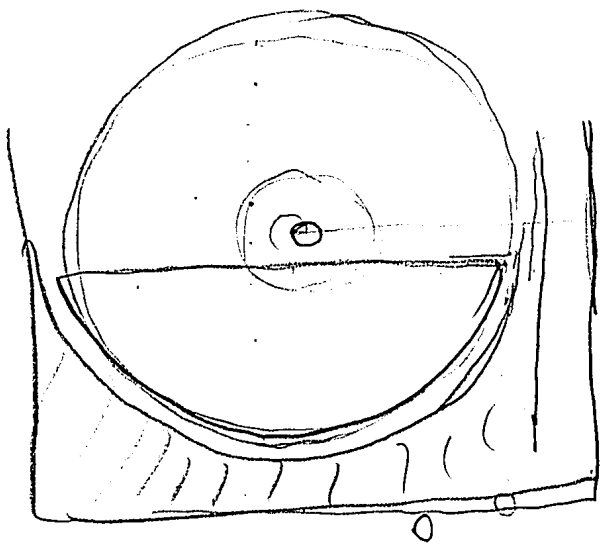


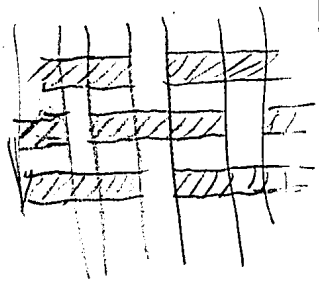
12) 3000 (250
24
60
60
5000

100 Rw -

100 - 30







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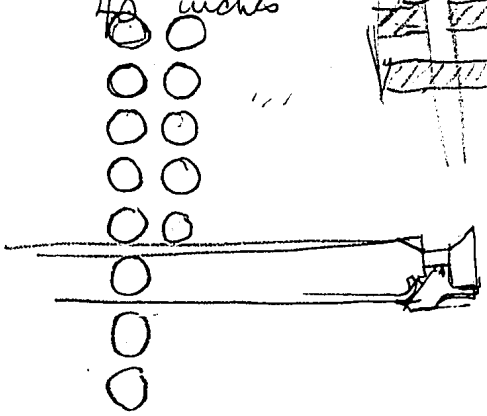
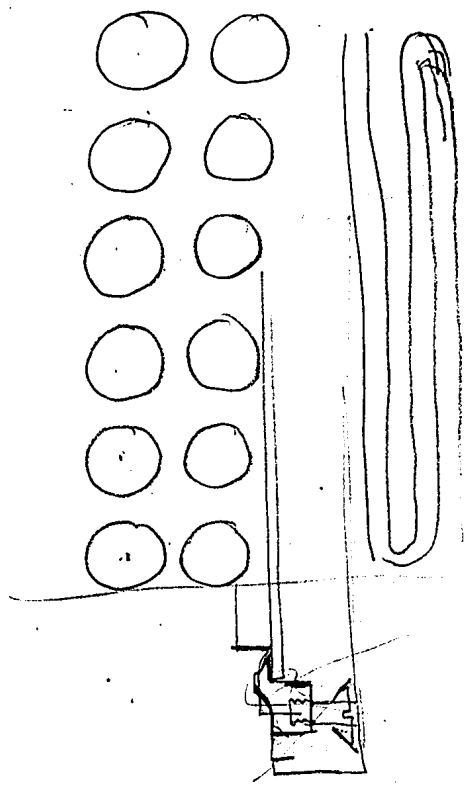
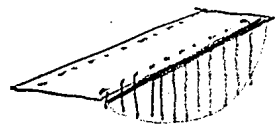
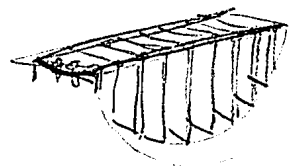
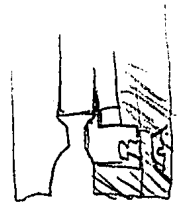


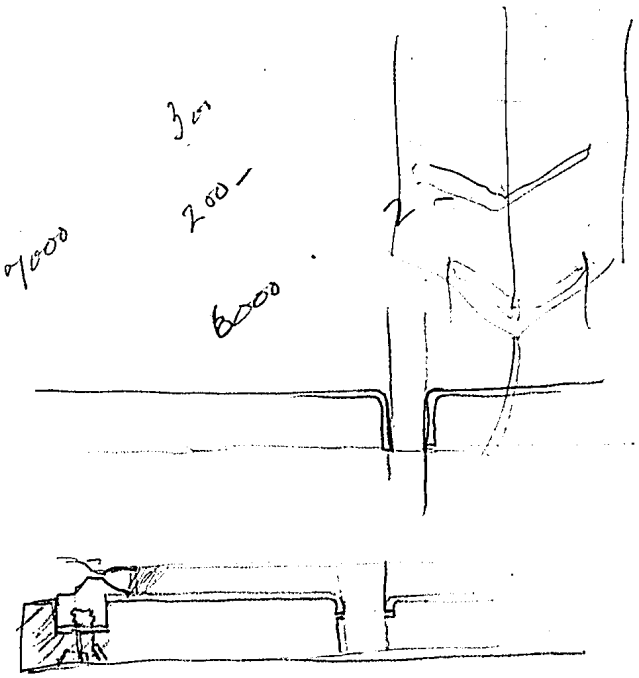


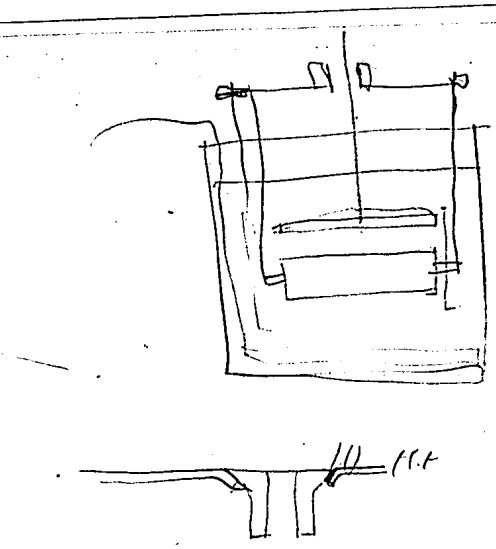


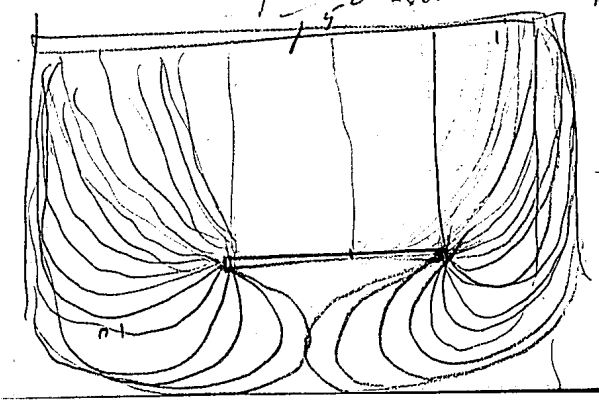


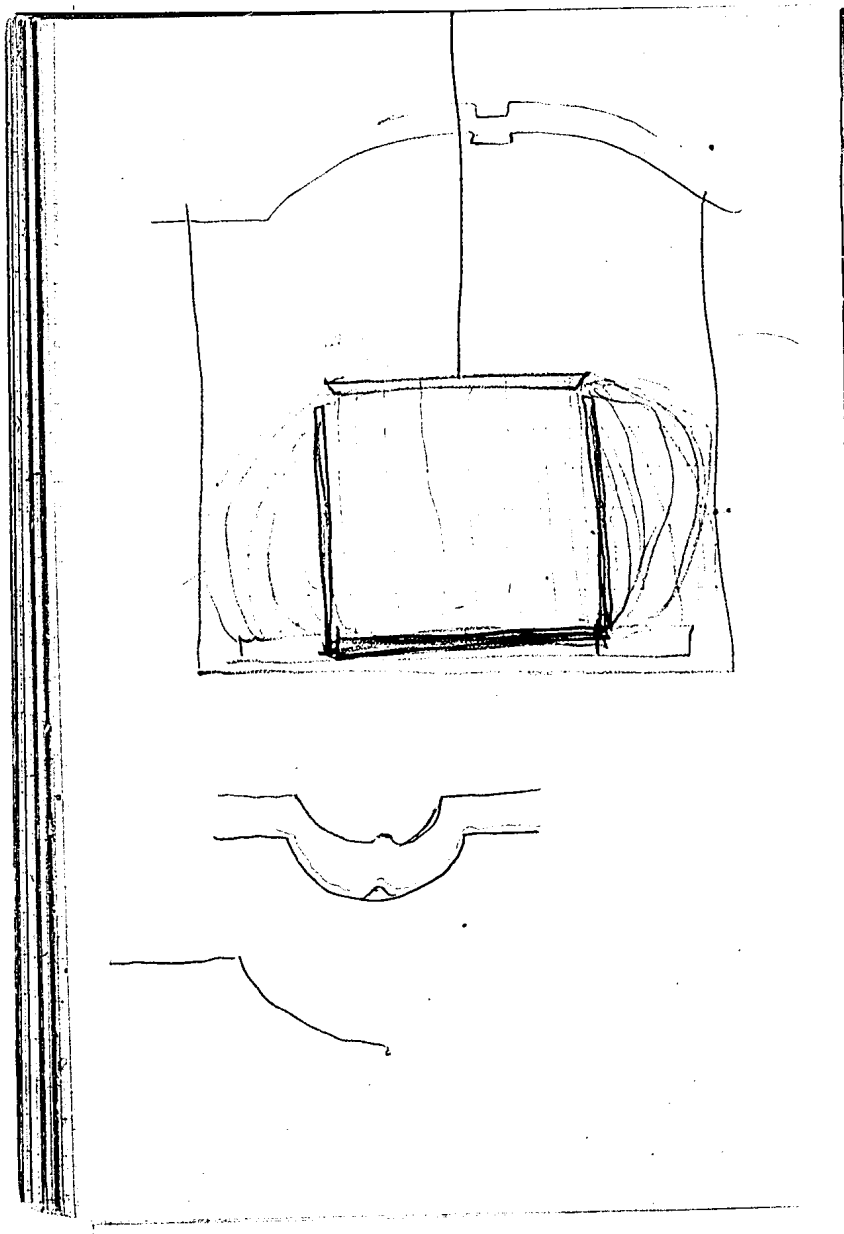
12
40
480

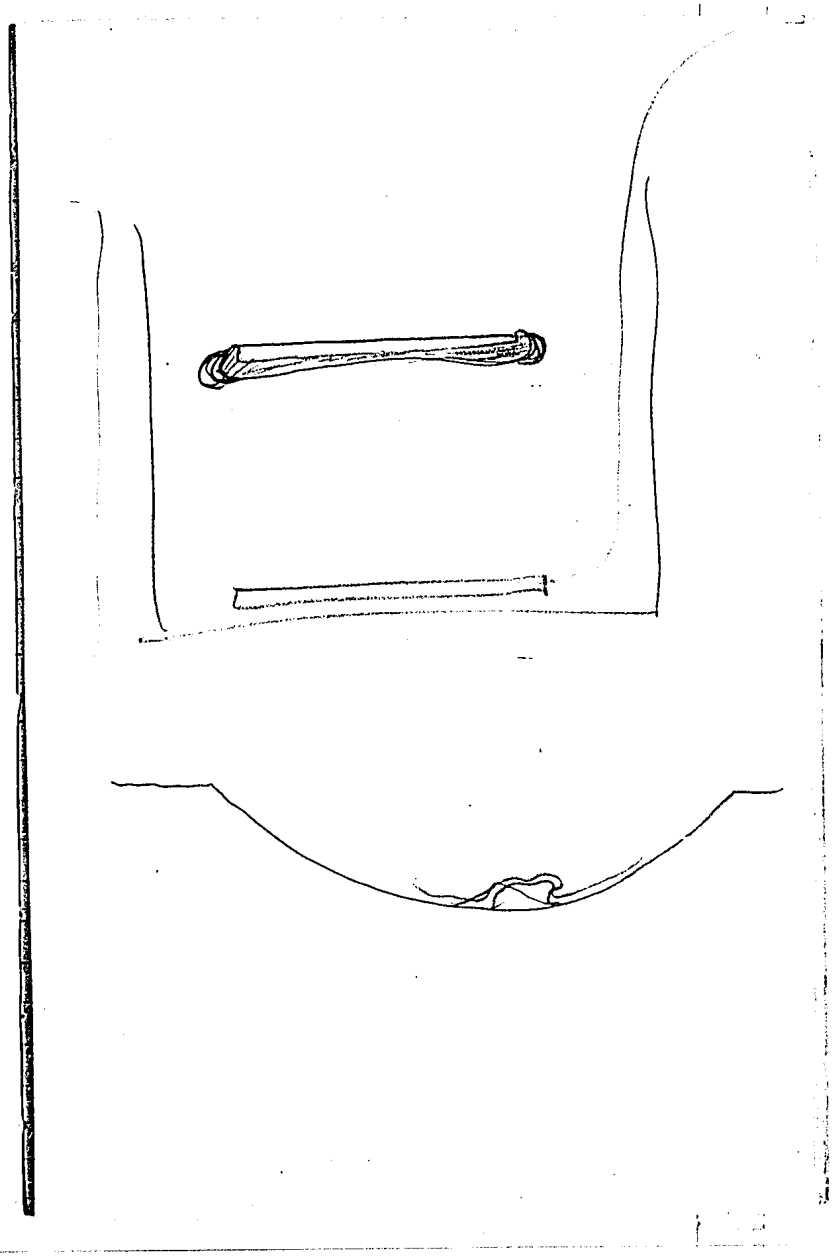


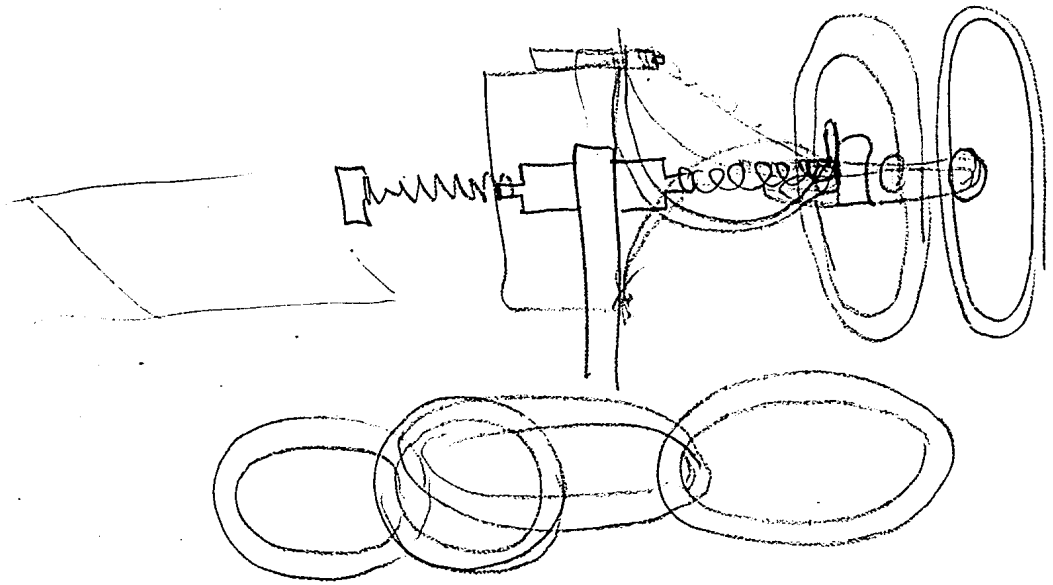


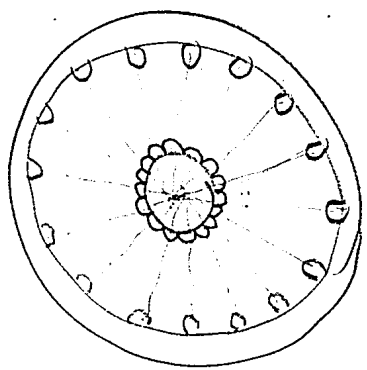












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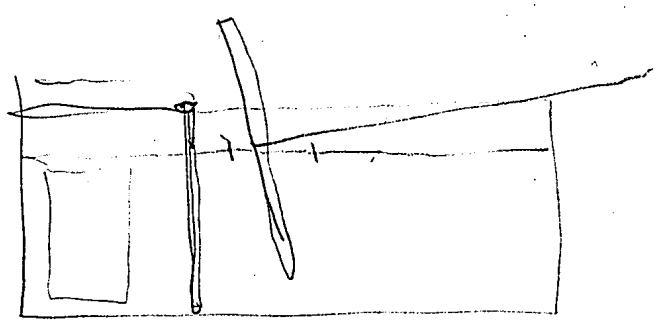


Phoano Phonola

Dictor

5 11	12	10 OR	4 OK fairway 1 BUNKER	
5 12	12	10	5 OK " "	
5 13	12 -	8 OK	4 OK mid velvet	1 ROUGH
5 14	12	11 OK	5 OK nearly velvet	
5				

48 - 39 OK 80%

14 - fairway 2 RO - 86% —

48

16
15
8
10
24

82% —

25 —

60
18
48
60
10.8

Grams	40
Kathe	160
Measures	54
[illegible]	60
[illegible]	96
grains	70
	25
	505

Grams 505
1294
3600 | 17990 (49
14400
3590
3240
108

Tesseiro,	60.
Plate 6 x 6	125
Edgers	72
Washplates	72
Numbering	90
Press	220
Triangular	72
Squares	72
Drafting	25
Foreman	52
Laborers	36
Oven	30
Powder	144
2 "	24
10-gauge	120
Forum	30
Extra	50
	1294

49
1800
1799
300
3899
1800

3600 | 38990 (108
3600
29900
2880

38990
2160
1739

3600
60
216000

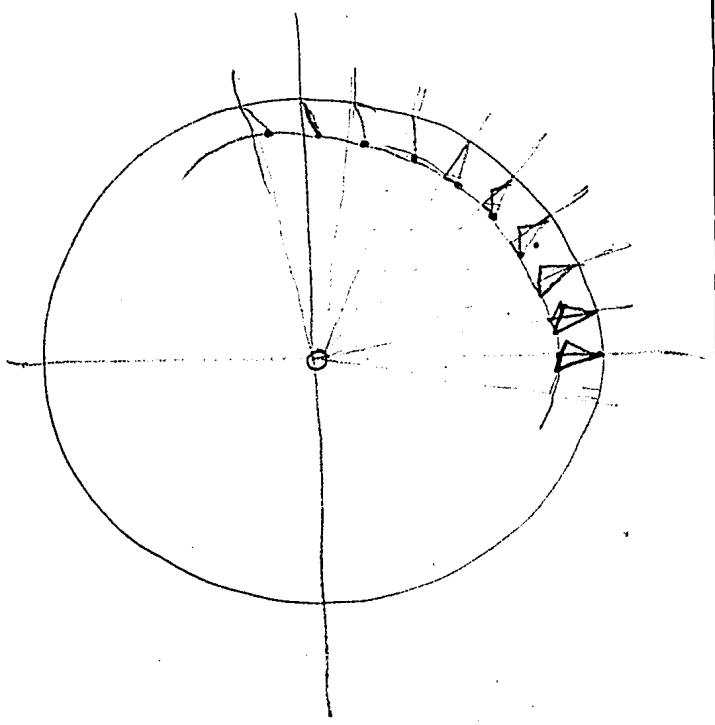
1200

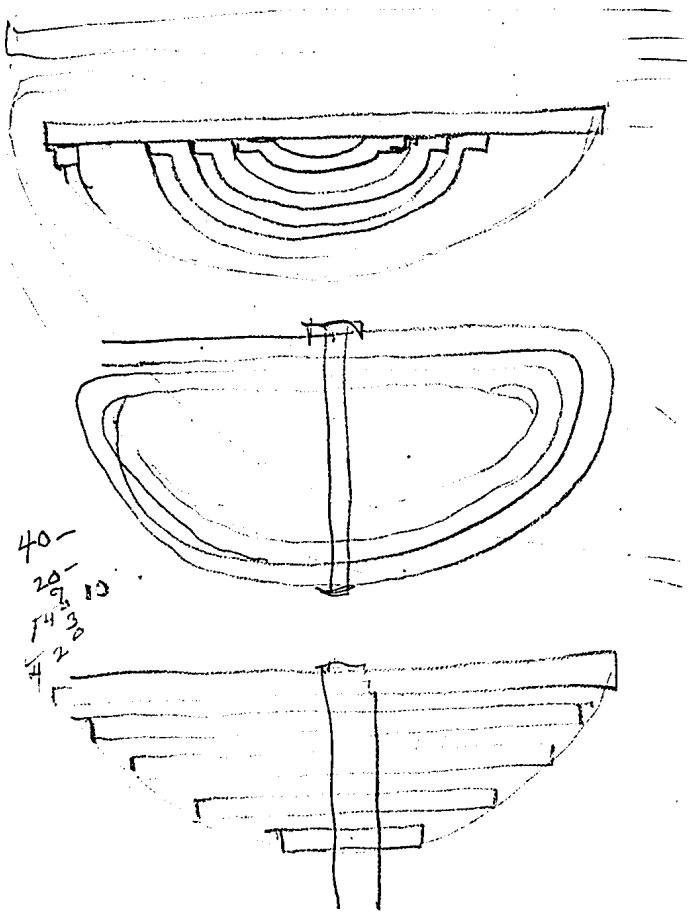
6 | 17390
2899
26
1734
578
514

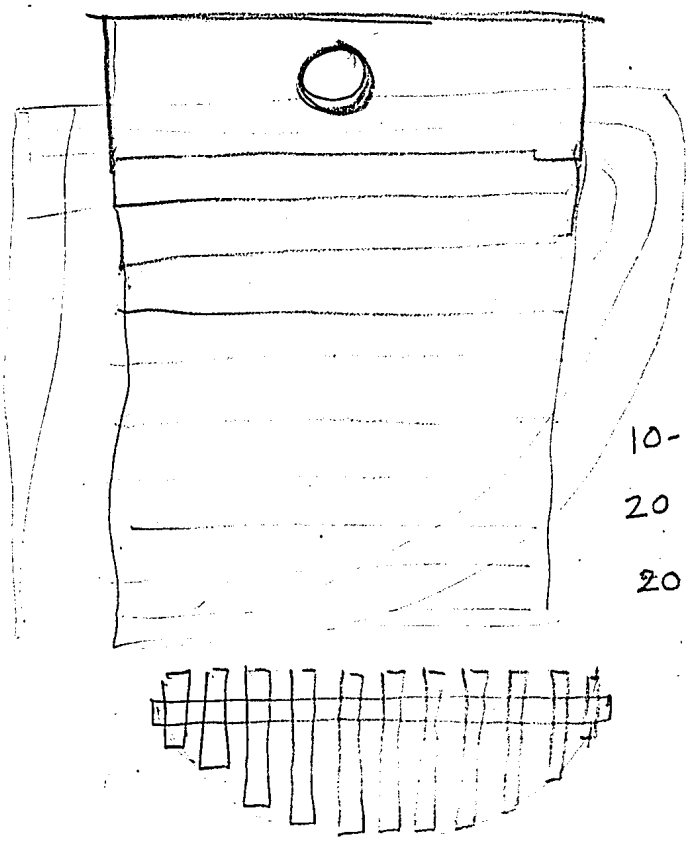
30
40
1200
26
7200
2400
312

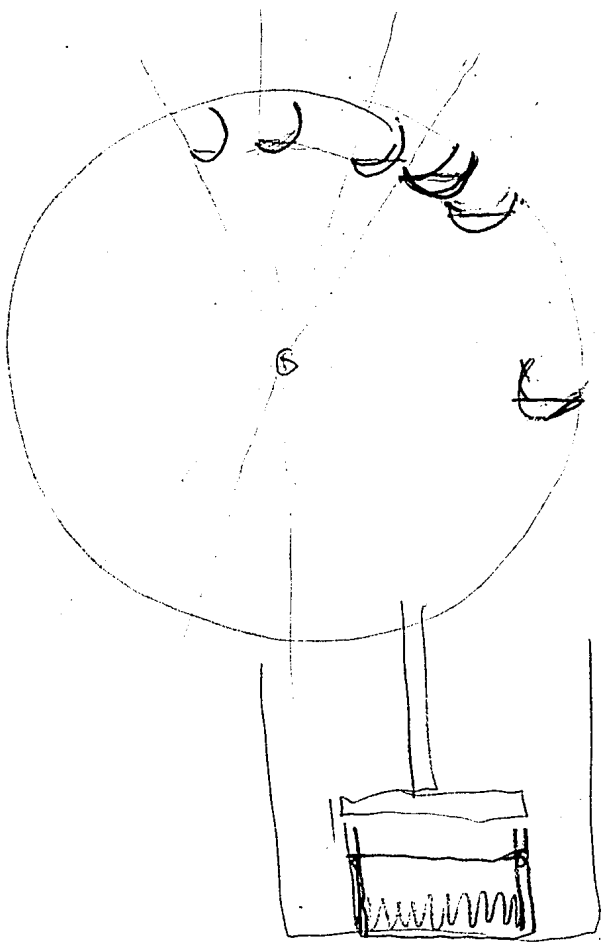
38990 | 6760
16
405800
40000
1800
4500
4212
338

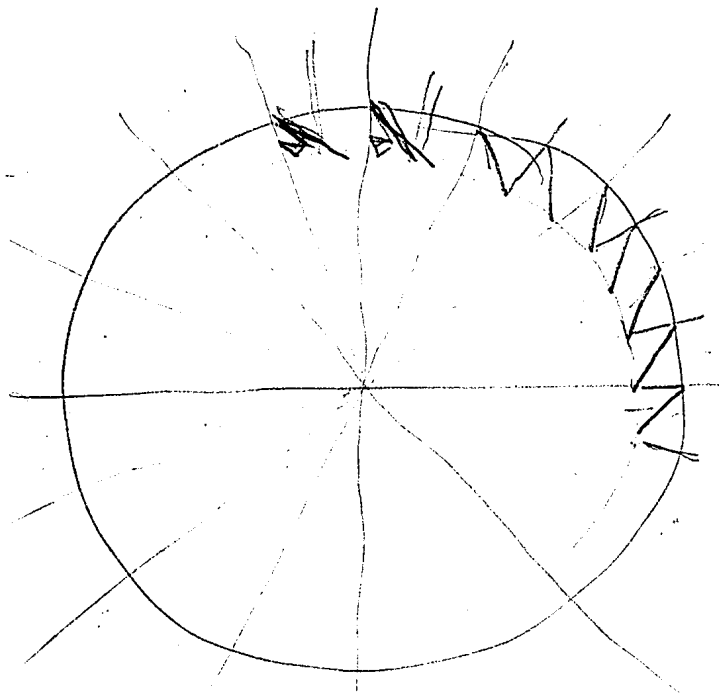
3890 | 576
2304
1536
1152
384

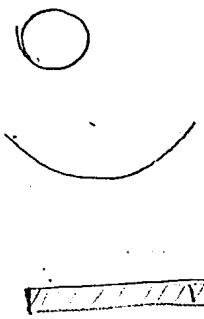



40-
20-
10
TH 3
2
FI

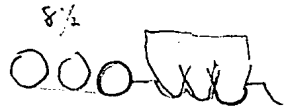

10-
20
20







8½



52) 750000 (14423

52

230

208

220

208

120

104

160

144

16

60

360000

200

90

1250

1000

800

200

130000

130

260

3000 - Rent

1'8000 - Income -

- Bg Income

17000 -

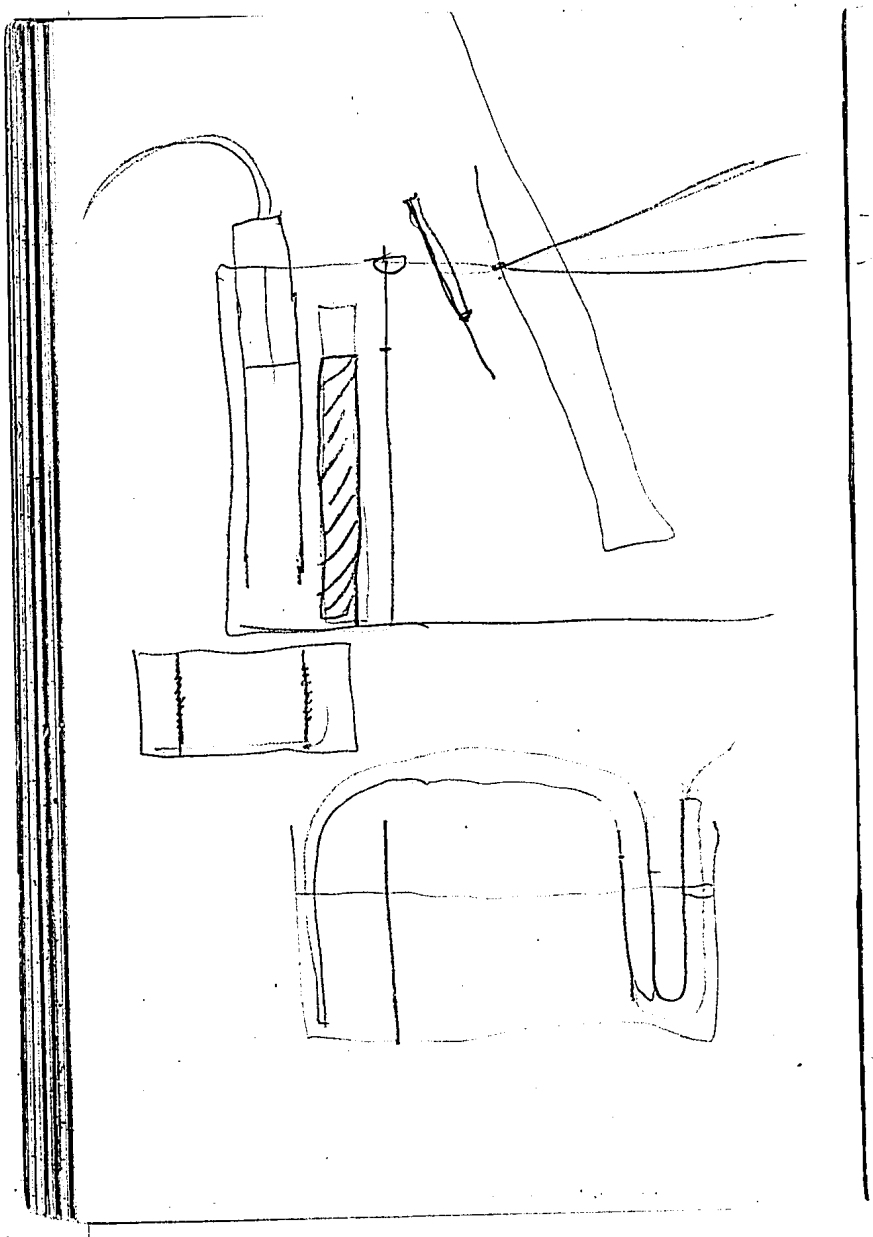
26000 -

1

36000

12000

1 14,



3000 Lb 15 miles hour 1.81 HP per hour

1350 watt hours

3 620 000 ft Lbs 1 hour

10% grade/2 miles max 26% ft at 10 miles/hour

1 mile in 6 min — 1/2 mile in 3 min —

8 HP additional —

786 000 ft lbs in 3 minutes

90 watts 15 miles hour

10% grade 1/2 mile long

52400

72

20

1440

52400

746 / 1350 / 1.81 HP hour

10

220

7

5240

15

26200

52400

786

3000

200

1

1800 / 15 = 120

120 / 60 = 2

2 / 1.15 = 1.73

30

200

150

75

750

1500

1/2

1/2

15000 / 26 = 577

260

170

130

130

40

26

14

15000 / 15 = 1000

3000 volts each

15,000

15,000 / 75 = 200

200 / 17 = 11.7

300

15,000 / 75 = 200

200 / 17 = 11.7

300

75,000 / 8,000,000 / 75,000 = 10.9

3

75,000

150,000

225,000

3000

10.9

5.3

3.63

2.6

52 | 75000 (105
52
3 00

3 times day — 4 instrum 40
4 Voices, 80
3 | 120
40

5-

30.
50
75 0 0

30 Tunes Sung 15 1500
8 Instrument 16 1600
4 Opera - 8 - 8000
6 Concertos 16 - 1600 } 17c
24 | 12700 (529
120
450
2 3

26 3000
8000

17

$ 530. for 26 Discs Each

3000 | 1270000 (4 3000 | 1270000 (423
12000 12000
7000
6000
1000

75000 | 12700000 (169
75000
520000
450000
70000

12700
5000
77 0

75000 | 770000 (10

Sopranos — 4
Contraltos — 3
Mezzo-sopranos 2
Coloratura Sopranos 1
Tenors, high 3
" low 2
Baritones high 2
" low 2
Basso 2

} 20 at 300 = 6000

Bookkeeper, 5 00
3. Assistants yearly 6 00
1 Typewriter Clerk, 2,50
1 Boy 1,00
Vice President Secy 20 00
Treasurer — 10,00 —
44,50

44 50
350
22-25
1335
1500

30000
6000

200 200

204
69
273

30000
3

10,0036
2000

3

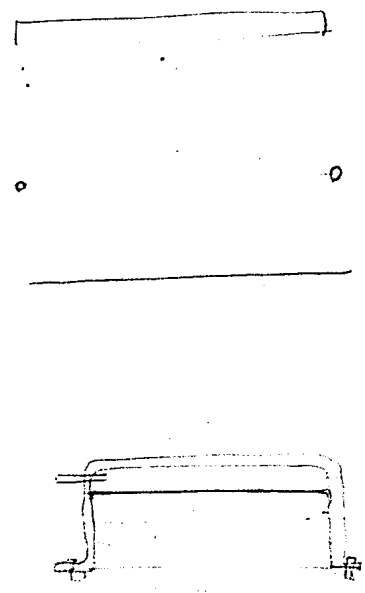
360

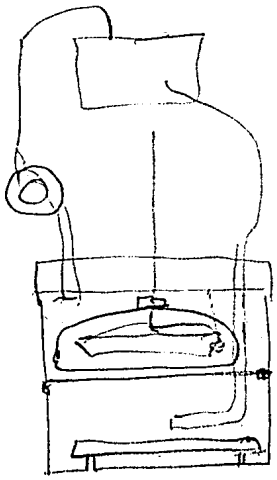
406
24
19

Mon

5000
1300
600
1500
300
8000
25000
1000
1200
300
2000
1200
6000
6000
6000
69200
13000
56200

Tea
5000
8000
13000





33–

360 –
100
260

220

260 – Conversation
80

30) 264 (8,2
240
240

3) 120
40

32) 1200 (37.5
96
240
224
160

37.5

50
1600
150

22000 20%
4400
17600
3520
14080
2816
11264

6600

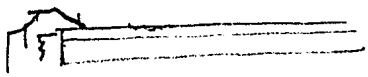
2400 Jan 2400 Records
2400 Feby 4800
2400 Mch 7200
April 9600
May 12000
June 14400
July 16800
Aug 19200
Sept 21600
Oct 24000
Nov 26400
Dec 28800
24000

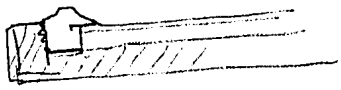
24) 288 (110
24
48
24
240
216
24

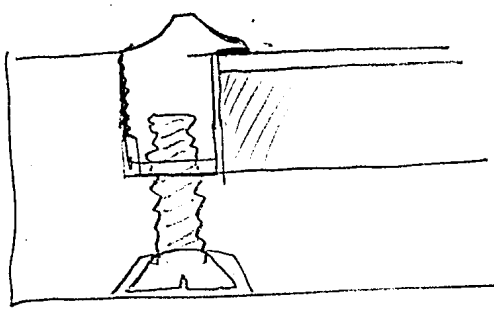
1 Year 288000 Records Monthly
1107.5 daily

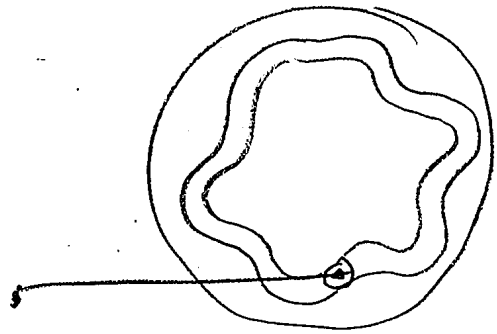
Jan 312
Feby 336
Mch 360
April 384
May 408
June 432
July 456
Aug 480
Sept 504
Oct 528
Nov 552
Dec 576

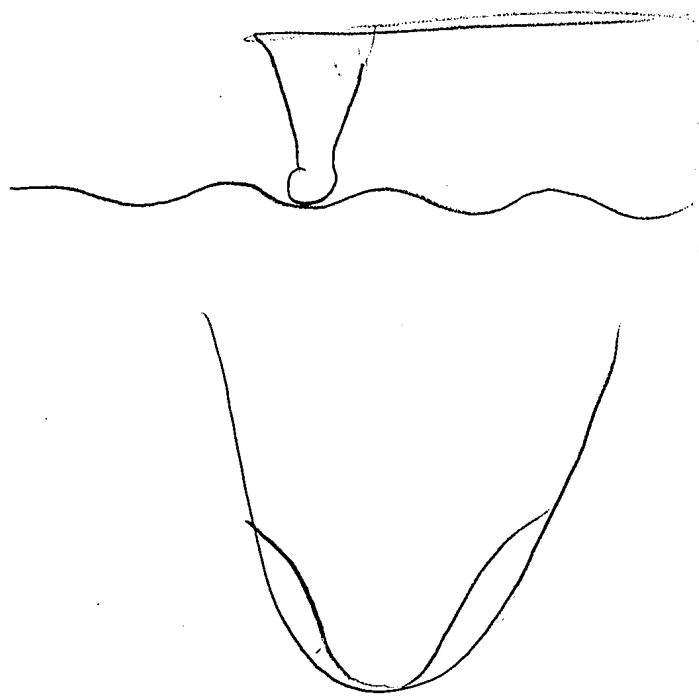
22/150

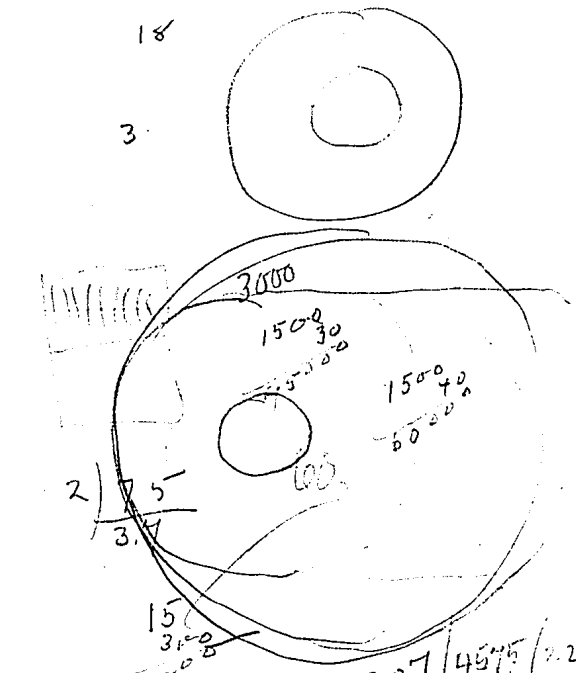


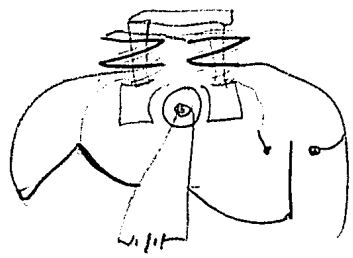












6 plates

100 - start, $ 5.80 cents

get 86 Transfers = Loss 14 worth 5.8 cents ea.
Cost 81.2 cents, Thus added to 5.80
gives cost of 86 Transfers 6.61.
to present costs 1 cent extra bringing
to 7.47 only 63 good 23 bad ones
7.47 Each. Cost of 63 is 918

14.6 Each

Have 37 returns at 3c each worth 111

Making final cost 12.18

5000 start with 865.00

17.3
12.8
30.1
40
12,040

42
3
7

111

747
171
918

100
63
37

5000 | 865.00 (17.3
5000
3650.0
3500.0
150.00

580
14
23 20
580
811.20
580
6.61
86
7.47

63 | 9.18 (14.6
63
288
252
360

86
63
23

7.47
23
2241
1494
171.81

918
111
63 | 807 (12.8
63
179
126
510

6.80
9 00
1580 24

1580
240
1820

865

707

6.74

10000 | 90000 (9

9

6.90

10.4

1820
40
7280

1820
7280
2540

37 | 385 (10.4
37
150

100
37
63

63
28
504
126
1764

1.76
2.09
3.85

580
36
3480
1740
2088

53 | 5,80 (1
108
53 | 472 (8.9
424
480
477
3

8.90.
990

84.
84
63
252
504.
529.2

53. net

4.7
23
141
94
1081

10 per day

6 Lacs

75.

1000 - 10

500 - 80000

100 - 800000 - (10000.

150 (500000 (3300

4500

5000

80000 (100000 -

1

3300

12

6600

3300

9900

64 -

128

128

64

7 0 0

95+

15

3

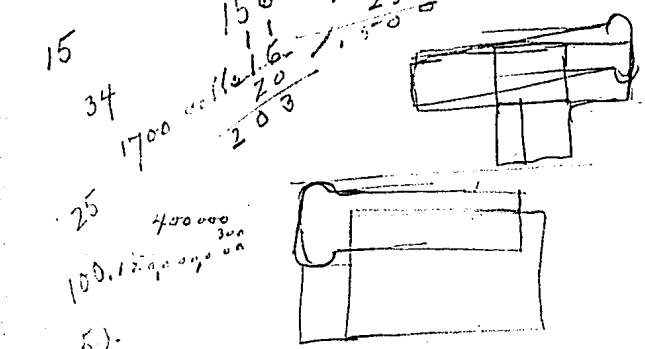
15. 80 min Trip

60 Trains 15 hours -

1 train 30 15

60

900



120 000 000

$\frac{1}{10}$ c ton mile —

Notebook Series -- Notebooks by Edison
Notebook, N-12-02-01.4

This notebook was used by Edison during January and February 1912. Included are notes on "experiments on sound with different phonos" and various recording devices, horns, and studio furnishings. Also included are notes on surface cracks and dirt on celluloid disc and blue amberol records. One notation indicates that "perhaps we shall have to abandon the blue & only use grafite." Many of the entries provide Edison's reactions to individual recordings, some released by the Victor Talking Machine Co. and many produced by Thomas A. Edison, Inc. These non-experimental entries begin a series of notebooks containing extensive "comments on disc records," with N-12-04-17.2 next in the sequence. The recordings evaluated in this notebook reproduce opera and popular music; well-known Victor artists include Enrico Caruso and Al Jolson. The book contains one note added by an archivist in 1973. The front cover is labeled "Comments on Disc Records No. 1" and "Ent." The pages are unnumbered. Approximately 100 pages have been used.

4 Feby 1912

Experiments on Sound reflection to phono.

Listening through horn in tent, the loss of Volume is roughly 1/2 = at the house I very seldom heard a word of the song although I could in the tent generally heard 3/4 of the words, ~~seemed~~ Judged Volume of Sound were the same

Also when singing and the Volume was 1/2 as great as before, I put a 4'X4' board back of singer, the volume of sound was doubled & equal to Volume at house.

In the tent the horrible interference squeeks of the sound shadows was nearly obliterated what little there was evidently comes from

the metal of the horn

A Horn dried will nearly weigh 3/16 lbs. but only 1/5 as much as a bell but only 1/5 as much as a bell

This shows us from as regards volume that the horn should be very smooth inside for vibrating + to prevent horn seeds from vibrating they must be of thick [illegible] or Brass or steel, or two horns one within the other 1/4 inch space between + filled with oily glycerine or other viscous liquid

Noticed that the short vibrating horn gave high note squeak on tuning fork + on Xylophone. Tried to 26 horn which three times longer they disappeared as the column of air cannot be

in tune with employing the Saphrana quoin — on looking this with Trevor it shows response to certain notes by using a clear longer horn No 24 — get no response from 2 like Trevor or Saphrana one or twice afterwards got it from Saphrana The Volume is about the same + articulation just as good —

The proves that in test where there is no echo that for all grades of notes of Flageolet that probably No 24 or Couple foot longer that there will be no horn resonance + articulation + quality will be fine. There appears to be scarcely any muffling to the sound

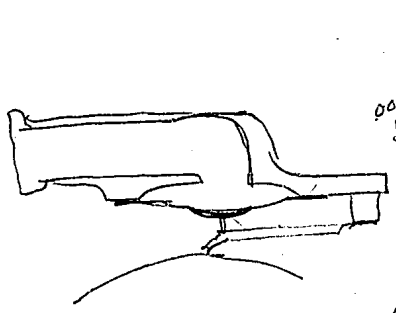
Volume can be attained by sounding boards of glass etc placed behind the

instrument or recorder as
close as possible
So the Echo & original will
nearly coincide — The Echo
serves to increase the power
& cause it to be less sharp &
also adds to the completeness

If the first experiment certain
deficiencies from the recorder
& sound it will influence
& diminish the volume —

It is probable that many
plate glass reflectors
for Cryptic use, to test
glass preparation

The most sensitive recorder for
Hughes that I have struck is the



The great advantage of this is that the disc is perfectly free to move at Edges the disc is only held in place by the capillary attraction brought about by a film of glycerine between the surfaces of glycerine is especially good as it has great viscosity, does not freeze or change & does not attack the brass or film of soapy ordinary Condensation 30 ft away with very small horn is intended so I can hear some of the words—

Another advantage is that the sound wave does not leak around the edges with this washer diaphragm

is pressed inwards by the
Knife cover — with the Knife Edge
Around the Edge of the Dia
Considerable pressure is required
inwardly against the Gasket
of the diaphragm to prevent the
Sound water leaking — this
is unnecessary with the
glycerine where very much
thinner discs can be used —
as there is very slight
pressure use with Glycerine
Resistance

Take 1

Listening to Written Records

821-1 Croxton Quartet

Martha Quartets

Tenor good –

front wind several big Crackles –

Surface small Crackles

Not loud enough –

Voices interfere

Record rejected for

quality of singing

for Crackles

Wurlitzer Records
651-2

Warblers Serenade
Concert Band

Squeaks — Bass clarinet
not support, surface good
Too much padding = repeating
Some people might like this
but I cannot understand why
think it would be to keep those
loud shrill sharp strident
bands off at first,

143-5

American Patrol

Military Band

squeaks - Wheezy - Too loud -

woken loud quality

rather - RR squeaks -

Dont think we should

should use this.

Lots of repeat rehearsals

gets rid of -

665 - 2

Danube Waltz -
Concert Band - 3

Considerable scratch on start,
Tempo a good time, but
Tone and squeaks - colleges -
should not use this
Can be taken perfect
until these colleges
should have this time with
Orchestra -

652 51

Marching Band
Xylophon

Chas Davis

This is good but Chords
accompaniment as req.
However if Com Chords
OK - acc right -

160-5

Amd Chorus

Band

Wheezes — squeaks

Considerable repetition —

If Com thinks this ok

I am satisfied I cant

Enjoy it with the squeaks

wheezes & loudness If

taken by an orchestra

& proper instruments it

would be good

803-51

Old Black Joe's

Croxton & Mixed Quadrille

accompt at start Squeaks

squeaks in ranges due to

Loud accompt.

Voices unconfined badly

no sweetness - Lots Educ. Voices -

Norma

598 52

Dear Heart

Kaufman Tire

Connecticut Cancer

too much — to use on

this type of cream

696

Gypsy Love Song

Croxton Singers Columbia

too much sarabde and

steel- Barytone a quick

his voice change to

mellowness

Voices heard

Interfara Record HLG

615 51

Stars & Stripes Forever
Band

Too much scratch
Wheezy, RR squeaks —
Record greatly Rotten
NG

R

191

Lead Kindly Light

E Nunc Quant

Two words for Miss

Accompt Rutton

Voices only

Record only

R

616 S 2

Love and Regret Song

Vern Trio

Too much scratch

at Start, also all Through —

No -

Cant hear scratch on these

Vern Trio Records —

812-3

Museum Travelers

Agnes Kimball reading

Execution by surgeons

Natural curiosity

Voices indistinct

Wants [illegible]

Surgeons [illegible]

[illegible]

Love & care old Henry Mundy Geller.
Eyes with ordinary magnifying glasses
2 of 3

They [illegible]

Rings crackles slightly

Not known until a

dissection - Hall Thurs

824-1

Valve Seat
Band

No good - Expanded
band, V squeaks, Offcenter

Thrown out

R

742-1

Meet me [illegible]

Bennett

Wheezo, squeaks,

No good -

Goodwin Chemists of fame -

The Tune is fair but the Execution is not right

R

689-2

Limes Geologic Plots
Rugby Basin

Jurassic - Tuna NG -
Mainly small cracks
all through - Lots
Cracks at Base,

Record NG —

514 S 2 — See W Miller about Sapiro and

When Scott Conner Hammond Fly, Grace Kern + Pearl Kennedy of

Squirt in accompl of stand

accompl not ...

Hold this + may do

its Sat Telly - Sapiro

draws out the other

singer - but she has no

tremolo, when accom as a

flute + dances Carol

welcome —

801 - 7

Memorandum

Knock Guard

Bad grind at Each Resolution

Vacuum Loading

Accumpt written —

Not welded on it Ground

by —

R

806-1

Praise ye Lillie [illegible]

[illegible] Rivière Heights

Croxton —

Grand Beach Rev

[illegible]

Good time — seems to be a

[illegible] like camping &

[illegible] Wednesday &

[illegible] [illegible]

[illegible] to Henderson

Harvard rocky [illegible].

Everyone

Hastings —

La Paloma 67
Band

Squeaks, Very Loud —
Should be an organ —

Hold this —

Victor X Sent to Walter Miller

60069 — Isabel Marsh —

Very little scratch —
Thin voice, Little brunette
not a good Coloratura —
Extra sounds or doubles in
some strong notes
Trilling distorted — Tune not good
Weak record, Little Volume

17037 — *
Al Jolson
Humming Melody
Accompt no good
Abnormally, Sharp voice, Extra
sounds in voice, — No scratch —
Disagreeable voice, Metallic —
Tune not good — Volum good
Otherside — Same results — not so loud

5869=

Lyric Quartette

Estudiantina waltz —

Whoopi - ultrafox, novelty —

accompt Hoss band

accompt, Rattan,

We must do a lot of those waltz Songs a large part of Songs I have selected are waltz Songs with mixed voices

Fair value very little scratch

17032-A.

Senorita,

That just Quartette

Considerable scratch

Very bad Quartette

Absurd — terrible

Metallic sounds —

not much value

17033-B.

Lobsters Promenade

Fred Van Eps

Sensitive - Metallic sounds

on Banjo - useful - Valuable

17034-A

Moonlight Bay

Arthur Pryor's Band

Sensitive accompt on

this is a type of Band which

we should avoid, it could

not possibly be worse

17034-B

W.J. Van Brunt

Barker of Love

Scratchy

Voice good - good for no

Tune good - ~~not~~ scarcely

a sound of tremolo,

Extra Metallic sound

occurs in voice & accompt -

Tunes like this should have

a chorus —

Only decent record

so far —

17039-B
see below

17039-A is Victor
record 17039, issued in March, 1912.
The funny thing is that although TAF said of Wells "We don't want him", he had already recorded for Edison. Edison issued a cylinder of Elsie Baker singing "Pickaninny's Lullaby" in May, 2 months after the Victor record came out - all in spite of his comments on opposite page about Miss Baker, whose assumed name was Edna Brown. Leah S. Burt 8/9/1973.

17039-B.
John Barnes Wells
Manning Song
Serenely
Voice not good - does not sound
sound him. Use tremolo -
Tune No [illegible]

17039-A.
Elsie Baker
[illegible]
Serenely
Clothes pen voice, [illegible] violently
Changes Voice - tremolo awful
Not for us - Tune No
Record observed

17041-B

Campbell & Burr

Singing comic & old Virginia

Remainder not much

accompaniment

Horrible melodia Extra Second

Voices not good even for

Comic — Tune Vaudeville standard

178th Set of words to this tune

17043-B

Harvey Hindermeyer

Comedian Hebrew Blackface

Tenor only accompaniment

Voice not even for Comic

articulation poor

35213-A.

Dominion Minerals
Vic Mineral Co.

Decidedly
Full of Metallic Extraneous
all too sharp —

70068 — d'Aftaeum — Dominion Minerals
Vic Hi-grade
Decidedly
Absurd voltage spreads
Metallic Sound
This is the limit
of Imperfection —

89094 –
Crucifix
Carmen – Music Journal
Sensibly
Lucia di Lammermoor – Carmen
Has bad bruises
Voices relaxed
Not quite Combustion
Bath Lucia bruises
Tune good –

88339—

Cantos —

Elisa d-amore.

una furtiva Lagrima —

parody

accompt [illegible] Cape

Tremble nicolleau Second

ou Strong notes —

apoll by Tha —

Tremolo (cad.

Fantasy

88340

Amato –

Rigoletto

Povero Rigoletto ——

Recitativo

accompt ing – Signore ascolta

Voices within,

Thro' a Time – in the Opera

Dance not for orphans –

The whole is altered

88347 –

Emma Eames.

Dopo (afterwards)

Mendelssohn

good value – Voice not very
but great charm & finish
Expression – quite a little
tremolo, clear –

We can get better tunes
than this at present,
might do in future
good Soprano.

95211 —

Lombardi — Quae Voluptas

Alda — Carissi, Gourmet

Kandelaky

Carissa and his mates could

ought

Voici tout ce qu'il faut

noise ~ Handel

Combustion — none of

this on earth, Carissa

by transalo —

35214-A

Edith Helena —

Jrovalom - Peaceful world

Night Serenity

Voicing - Tremolo,

Not Indian —

Tuning —

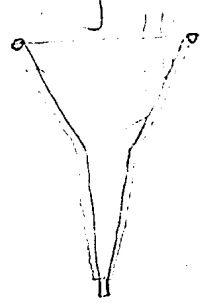
Coloratura,

Feby 5 1912

Noticed for long time noises in singing that I could not account for by using funnel to Lestan for Rehearsal Hundred times using I now find it is due to the bumping of the sheet music by the vibrations The volume of sound is augmented its probably the sudden rush of air over the edge over vibrating the paper that produces the sound waves – Observe have to have separate sheets for the singers at one time

Tests in Music room of glass with long horn filled with glycerine – (Double horn) that is several feet long – There was some sputtering squeaks but nothing near what they were before — The shorter funnel continued previously used in the Hotel with fair music

I changed over & put the felt outside. This is louder than the long horn, and the soprano voice is pretty good — I think that the felt will give soprano voice with a clear tone & am making a funnel



Lined on outside with 3/16 felt heat glued on

also a double funnel holding glycerine —

I think this will be good for recording

The larger funnel covered with felt gives no vibrations to the inside of the funnel with loud Piano — whereas the regular funnel gives big vibrations to about every 3rd key middle C & lower

Probably a lead funnel lined with polished brass will be good — it could be plated with Copper inside and then highly polished

Possibly the whole horn walls should Expand & contract to the sound waves like a diaphram. If so a very thin soft zinc horn say 10/1000 or Even 005 thick used for horn & then Cricket on cricketers with felt & highly polished inside

Our records

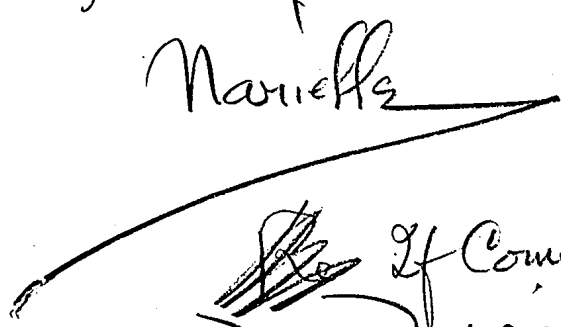
123-6—

Andrew Chenier La
Mamma Monta Cavanna
Melissa — Scratchy
Why have we scratchy
records now when treated
records were nearly free.
Of scratch — Something is
being done wrong

This time isn't much good
Possibly it might pass
~~Sss~~ Had it

102-5

Wearing of the Green
This might pass but
its generally a
Comcl Regmt. will not pass with a measly
like this →



If Comcl
record goes we will
accept it.

1489 -

full squacks, Scratchy
Master - never would
make Comaccounts
Had this -

Is this Birds
of the Bro ake -

No master left

Standard 6-287-S4 Rev. — Capitalization,
~~288-4~~ ~~a Sentence, 6 of Articles~~
Victim

Reference Army

Very good —

But Secretary

Thank this might

pass the Court

When Secretary

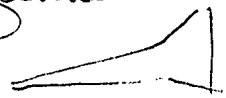
reduced to normal

July 6th 1912

Experiments etc

Apparently when the thickness of an ordinary Counterfeited forged is placed in front of Funnel Heat goes thru the Londoner is accurately determined & the quantity seems more natural & Metallic —

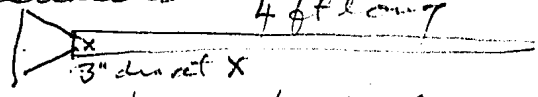
Trained when looking to Appearance that of Pocketed Funnel



felt lined down at angle 45 or more Londoner Carpeted floor in Lab House reason that the RR squeaks disappeared best Vacuum 1/3 = no other position did it

Carpet

Peerless Loud Long paper funnel
yellow or red cardboard horn
Calculated 4 ft long



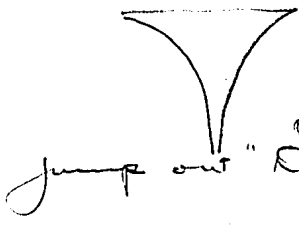
paper is 1/32 or 3/64 thick wound
with Tape split

This is good horn Loud—
Long Taper seems good —

We made an horn Like the above
out of one thickness newspaper
paper & flare of same Even Claus
up could only just hear
Peerless Phasing Enamel
Down in Vac & probably not
get Noise To get max Vacuum
must have green 1/4 thick or
steel hardened — a Leaded
with felt or Gasket —

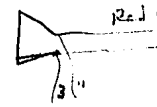
Warner
Dunwiddie – } BC&G 20 –

Telfone ~~57~~ 57

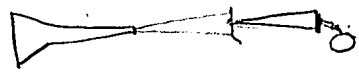


Reg horns –

Best so far is glycerine horn with 2 To 4 thicknesses of Red Comforter cloth over mouth.



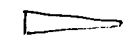
These are horns once used on Gramophones —



This is loud + full of high note reverberations — The second type,

gave old Lullaby horn — 16" away

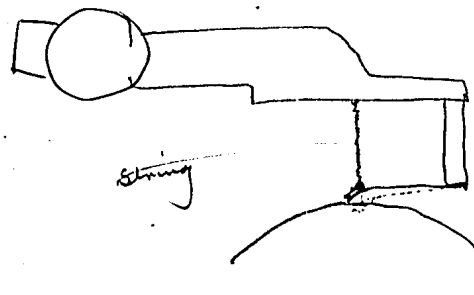
Loud + good beat tattle champ didnt jump on Nellie - Day -



Still smaller No of Cora

16" away — only 2/3 Loudness

Jany 10 1912



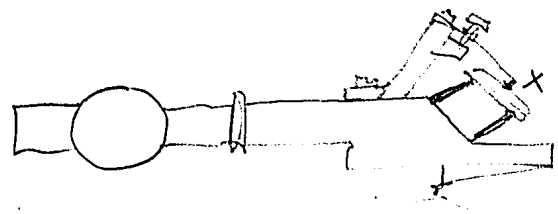
Recorder

1 ± og stramon

Dia

January 10 1922

This device make it rather sharp but notice that valve second jumped out & don't seem to produce sequence & early. Sounds + Do not think there is much in this.



X is a light valve faced with Rubber, when driving rate comes valve lifts slightly & prevents too great compression of diaphm —

Above dont seem to work —

When full open the valve is pretty good 3/4 of when closed

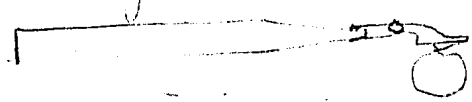
Feby 10 1912

Just tried plate glass on
door mirror & how we
detached first & all wings
that he can just hear a
faint conversation detached
very soft & distant like —
This glass reflect as
looking glass only
one up against to
get a detached
Canal door beam

Feby 10 1912

After trying all the various double funnels the length of one vibrator would take a Trouncer we can't find that it gives any unexpected sound

just tried glass tube 1½ dia



This is a decided improvement on overtones, I get B flat when Raphael sings, very soft the more sluggish vibrations that the delicate overtones must last unfounded but recorded so I can hear

The glass funnel Liz was still
working up

Disc record "Rowing" which
had Commencement Cracker
gave seriously annoying effect
following at certain
Rough ...

Just found that rebuilt
records blanks coated
with Coats of paint
brought in by dipping
long tubes in acetone

blue which got fixed with dust + this on pulling out from liquid was left on wafer + produced cracks — there going to be difficulty in keeping dust from the wafer — this day = The whole blank is free of cracks + dust = perhaps we will have to abandon the blue + only use graffite

Darning staining the Jeans by the Brush rejected More in Nat Accepted

Natrac Cloths on Celluloid Blue record fund it due to dirt in the Dye which stays on when pulled out of bath - The white ~~wooden~~ blanks are quite free from Claws Clutches the showing that the Crackles heard on Phil gate production is due to dirty manipulation of the dye etc -

Graftized 50 rems Loud Bands Shadow brand of Mill of deep weave worn a little, so shadow blue

The One called with Silver Lay Worth after 50 shadow no loser as the fiber of Silver is tough If the Could be done again it record

be an improvement on the record as it would clarify & we could use white blank & get rid of dust from blue dye

Only use record with proper account the way I want it to 813-3 -
with a note to remove
if Committee to amend
if we have it

Our Records

699-2

Amer Chorus Ill Trovatore

Edison Light Opera -

Passed as a 2nd

S

R

Our Records

836-3

Happy Days 6/

Eleg Spencer

Violin + Cello ∞ 6 Egyptian

will pass this one as 2nd

692-1 ?

Lost Proceeded

Mellow Crooner

Good like accompt — Very Scratchy

— Tremolo — Thin record but

Considered good enough —

801-T Gen Disc

Dont like the accompyment
Chorus, too sharp not
Mellow- Vaudville voices
& pitch too close together
It is diffrault to understand
how a person could enjoy
this without a chang(e)
Scratch very bad-
ing-

8/10 ½

Flute squeaks - Safranos very prominent
Wants a Baritone or Tenor voice is as prominent as the Mesofranos - Accompt ng - Can scarcely hear Tenor [for Contralto] - This destroys richness — Safranos has considerable demand.

Had these voices given proper prominence - the fifth squeak got out the second coloured Oe OK — tune good —

As it is it pretty good record — No scratch think it getting done over

803-3

accompt not good —
last parts squeeks in it —

Chorus. Rough coarse not
sweet baritone or tenors in it
Big Baritone OK —
Chorus is poorly arranged

Very scratchy inside
just before music stops
not much on start —

The Chorus voices badly
unfurls —

Not sweet record
due to bad Chorus &
accompt —

852-3

Madam Butterfly
"One fine day"

This is no Tune at all—

Kimball's Voice is in some
notes a chatter or very
rapid tremolo— in Recitative
its uncanny + not mellow
We must have Ed singer free
from these defects,
Record well taken + not
peculiar— accompt
rather too many mechanicals
+ not sweet—
This singer has too many
glaring defects of voice
to use in an Opera Tune
like this— admired accent

839-3

Killarney

by Maria Marella

Account NG= Marella has cleaner notes than Kumbalee very little transcribed. Too Pretty accompt. Pretty Scotchy Take it over with good accompt—

816 – 2 Rejected

Where is my wandering boy tonight – Gillette & Mixed Quart

Accompt too heavy org ~~too much~~ too many ~~returns~~ – It should be soft Chorus uneven Chatters & too far away Wants an accomp like Eve Star from Tanhauser Chorus coarse & trembles Gillette has a tremolo – Thus Record cant succeed on account of bad Chorus – + accompt Some Bag Crackles on it –

634-1

Cavalleria Rusticana
By Vantine

Record a 2nd. No melody
just unintelligent shrieks
of excitement & may do
for Opera records —
not serviceable

810-3 =

Trust in the Lord Rejected

By Mrs Van der Veer Miller —

Awful tremolo - poor articulation / too many instruments / no accompt not melodious accompt Very unsatisfactory record not scarcely voice records - Dont think should use this —

680-2

When the Corn is waving
by Knuck Ramtella

Interference of voices —
song no good — voices
not sweet
No good — not scratchy

Rejected

821 – 2

Martha – Good night.

Croxton Quartette –

Interference of vocal
high squeak of cellos

Knocks – Noises

tenors high note squeaks –

This time not good,
Combination of voices not
good – Record not accepted

Rejected

854–1

Pussys in the world

Manhattan Ladies, Quarrelle

Bad influence on Vacc.

June no good – Quarrelle

ditto – Rejected —

Rejected

820-1

Because
by Hargreaves

Account dont seem to bear
any relationship to song —
Man has awful tremolo
some people might like this
I cant, Well recorded —
On the long sustained note
The account with it is
unmelodious & bears no
relation that I ever saw.

Ryden

825 — 2

O for the wings of a Dove
Chorus & Quartetto

Soprano very rapid towards
Chorus interference of 6
voices — Noise —
Not sweet a mob,
to complicated to touch hence
flutters in chorus —

Soprano voice not warranted
Not accepted —

Rejected

161-4

Bonnie Sweet Bonnie

Maria Marella —

Well recorded, possibly might

be used as 2nd some future day

All these tunes are in fact

better when Concerted —

Marella, has a lovely Coach

Round income by her notes —

Not exciting —

858-1

Stabat Mater

Agnes Kimball + Chorus

Soralchy —

Pretty good, chorus has very little intonation — The record beat up has lots Scratchy Crackles

Wirth says don't think its an mould —

has another Master —

2nd pressing

Very little better

scratchy at first Glossitis for last second big knock

931-2

Heart Strings Waltz

Vecsey Orchestra

Transfer Lote + has a Blotch —

accepted —

~~Cracky~~ + Crackly scratch got out —

2nd Edition pressed again

accepted

832-1

Heart Bowed Down

Chalmers

accepted - good singing
good accompt —

Record is too scratchy
Will make another transfer
or will make up the
other master -

Jacob

818-2

Der Gergenmeister Von
Crenshaw
Spandau —

Its pretty weak + so ok if
we can get the Germany
Crackers out on Communal
Record so they would not Rock
it up + we should have to
abandon These weak
records = With his Master
Crackers a little too much
perhaps his next transfer
would be better —

848-3

Prize Song Die Meistersinger

Albert Spaulding

accepted as to Execution this

last named Locke & Leon

secretary

822-2

Quartille from Ruggedness;
Croxton Quartille
Enlargement of ordinate
Chorus rg - simply noise -
Worst yet. Each voice
should be clear -
upheld,

R

673-2

Enterprise Herald

My Holiday Record

Glittering high note squeaks

Poor tune, too much repeating of theme

Awesome, If you do put bands on there plenty of long tunes & better ones

When This —

Don't like it at all

No Scratch

Constant Hum & Whine

was - Rejected

627-S1
Carmen Gl for the aversa me
E Ventura —

Poor accompt tremols bad
accompt too loud in pl. Lacc
Dont want this singer in future
Might load this record for
future deposition scarcity
any scratch which good
Rich mezzo it will be OK
but hold it — Dont want
put it out first lot —

Hold

716-S 1

H Knote

Siegfried - Schmelzfried

accompt too strong drowns outsinger

This man is a good singer of this kind clear no tremolo

He has not shown against this Military band - How does sound is the Volume of this accompaniment —

Hold it —

826 S z

William Tell -
Ballet Music
Concert Band)

Scratch crackles Considerable
squeaks wheezes — first few bars
+ [illegible] that good

Rejected

8335 3

Knuckleball Quan

Anne Lamott

somewhat sarcastic

Rejected —

Rotten Combination —

89351

Souvenir of Westcott

Mkt and Spreadsheet

Sandwich Transport

Accepted –

If Submissions are Gold + surplus of Commercial records are no worse than this – as there are some Exceedingly weak notes within

655 S1

Das Zuberlied

Edward Lichtenstein

Carnegie Tech

accompt req - Emp

req —

Not accepted

647 51

Elvino Ventura

Mephistofeles Dai Campi

a Discard — Dramatic

tremolo, singer no good

not sweet voice

Accompt Rattle —

awful tremolo

Rejected — mechanics

were perfect —

93453

Madam Butterfly

Aurora cut passed

C Melis + Met Chorus —

Acoustics — high note a great
overtone, Ratio Echo
singers of Chorus too far
away Sharp

Room echo Kills this on chorus
+ Recorder too sharp

Repeated —

It seems as if Brass + Symphony
on Stage should be in
this. If Chorus is to be used
in this way they must be
at a distance & the room
Echo will then kill the
record. had they been
in very large room away from
all walls & sound & better
+ good — in a tent —

94051

Woolands Lofthouse
Concert Band —

Discarded moved full crocks
has 1 more volute to make

This is no Tune —

Rystrat —

Better Make up after
white Meeting has gold
Has rule quadrangle 6/8
repeated as the tune
is poor Have heard hundreds
better — However make it
up —

730 51

Lohengrin in German land
H Knote —

not seriously

1st part accompt humbly
Bulgh Squeaky
but accompt is of our affairs
this as it does not drown the
singer Knote so Quelly
Knote singer for a Germanian
Could hope to get much better

Hold this, think it would
pass in time =

Its risky possibilities but has
some nobility in it when
we consider that it is wagner

Knote is good for us
in Wagners stuff
no tradition, Even-
mellow + unlike most
germans singers

(Now he is my responsibility)

779-52

C Albani + O Benedetti

Boheme - duets

Ah mimi tu più

Tremolos Voices duet go

together UC

Repeated

tremolos. beat

bad ulcufarm

Answer

772 S 2

O Benedetti -

Traviata di Provenza el mar

awful cracked voice

Coarse voice tremolo

awful on sustained

notes —

Never want this singer

Rejected —

63252

El Trovatore
Tocca la mallo -

Sig. C Bonnegna
acoustic ok -

Sharp - she has a little tremolo
not enough of Recorder
was not so sharp vocalion
it seemed be very fair.

Ok movement of count of
Mellon, tremolo & poor
voice in lower register

Rejected ——

best leads for future

This woman's voice is not good
with good recorder - use mezzo
voice she must train —

712-1

~~713-1~~

~~Frühlingsstimmen~~ Bajazzo-arioso

By E. Borgman

~~Melody Aria~~

Section scratch —

Female awful awful

Coarse of German Voice

~~Rejected~~

Female

Never want this

singer.

Could use him for a fog

horn on Labrador

Coast, for Bearing

Recording and effect

Course

728 5 1

The Meistersinger von Nuremberg Forgotten

H Knote,

Sounds OK – fine enthusiasm
tone, no tremolo,

Ditty the Accompt has so
much volume in parts –
Knote is good for us
with a proper accompt

You will not get a better singer
for Wagner than Knote man
only learn proper accompt

Hold this for future,

257 S 2

Voyelstran

Don't like this singer
Voice not warm Not mellow
Don't use him in future

Rejected —

968 s 1

Voices of Winds Waltz

Very Orchestra

Some vocalists –

Sharp: Leader

Interference in st, not

mellow – Trouble appears

to be [illegible]

Interference in st

Unsatisfactory – unfamiliar

Interference to all tunes

played by Pavilion Trio

Latest tunes all sharp

Rejected —

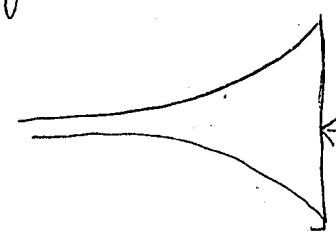
Measures shown that no wave system experiments and
demonstrations were made during
recent months by the
Pavilion Trio.

Notebook Series -- Notebooks by Edison
Notebook, N-12-04-15.1

This notebook was used by Edison during the period April-May 1912. It contains notes on phonograph recording experiments, including information on various recorders, horns, and recording arrangements. The entries describe three modifications of the "regular" recorder: a "Deep Recorder," a "Sensitive Recorder," and a "NY Recorder." Included are Edison's evaluations of the quality of recording in the experiments made with each recorder under a variety of conditions. Also included are drawings of modified recording diaphragms. Inserted into the book are several pages of loose notes and drawings by Edison and Alexander Pierman from the period May-August 1912 pertaining to various aspects of experimental recording equipment. The inside front cover is inscribed "Mr. Pierman's Tests." The pages are unnumbered. Approximately 75 pages have been used.

Expts - funnels &
Equivalent — apl 15 1912

A



Tracing Cloth

Deep Records - (1e) bigger chamber than Reg —

No 1 Made with end Covered

Doubles — bass weaker than high —

Considerable success but quality not good

No 2 Open funnel

Louder say 10 to 15% —

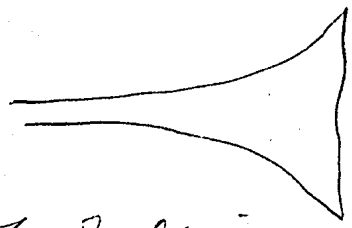
but no change in quality

Everything that was bad in No 1 is of course increased in No 2

Think closed funnel only good to keep air rushes from diaphragm close to it

Same as A.
but with angle notes
No 1 – No Double –
Considerably weaker than
A =

No 2 Open funnel
15% louder
quality not good
Enough –



Deep Rich

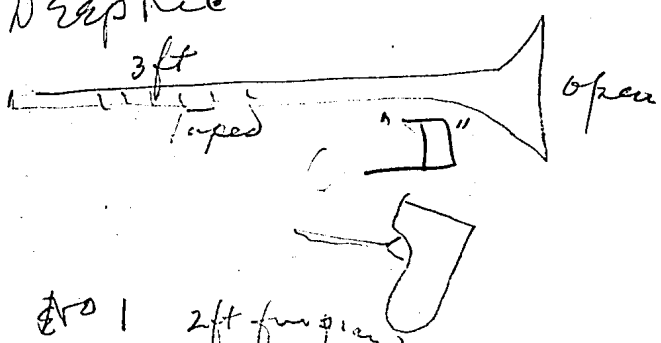
No 1 2 ft

2 4 ft 25% cocaker

3 6 ft 40% cocaker

Single male

Trap Rec

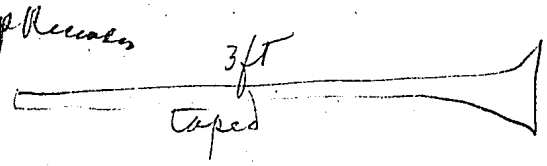


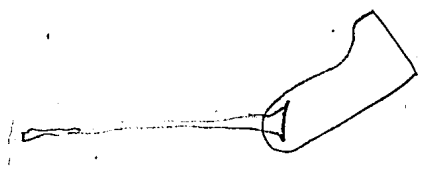
No 1 2ft from Piano
Loudness Like No 3 on Last page
quality infinitely superior —
No 2 — Even with Edge
four Doubles, 50% louder than No 1
quality not as good as No 1 -
should good —

pretty often Uses funnel
as comp and to A. Leads

E

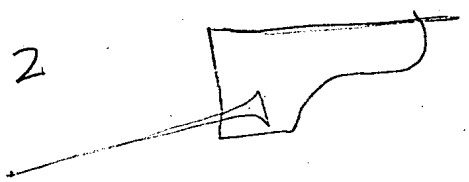
Strip Reeds





#01 - Loud about same as #2 D- quality no better - Some doubles

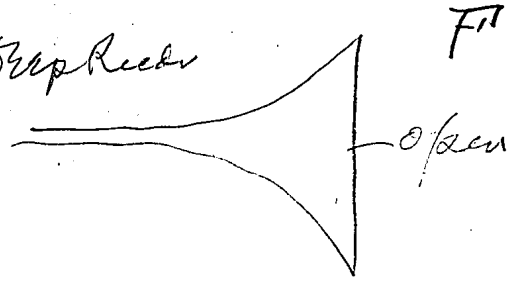
#02



Not much diff
More doubles

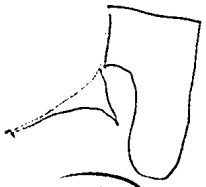
Deep Reed

F"



No 1

Fair Loud, few doubles
Bright strings awful Metallic
ring of Metal, quality not
good, would good

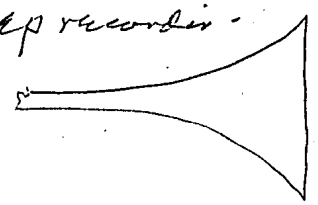


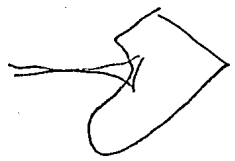
No 2

Double Barrel so
good as No 1

G

Dep recordin -

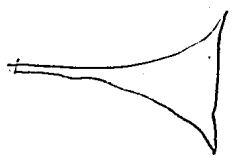




quality not good on
this Hammy —
rather weak as compared
to E funnel —

No 2 gilt plated
oxn plans —
½ the value but quality
100% Cattle high Holey
are natural —
Something in this

H Deep Reed



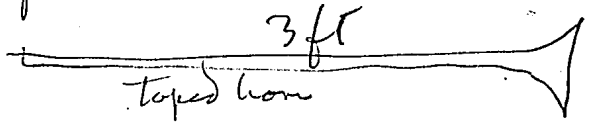
Cover down on Piano
Phono on floor —
horn under ground
horn resting on floor

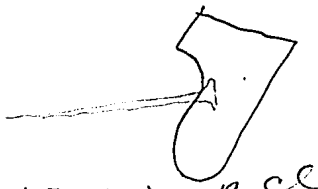
1 St 1/2 Single reed
Not so good quality as Quilt, Volume
little greater
Used in Octave
Double —

Quality not to be,
Compared with Quilt
Quilt better & high notes
perfect

I "

Exp





horn was pointed up close to boundary board — top piano closed lightly

Not very loud — Doubles hear thump of hammers very distinct

X-oz

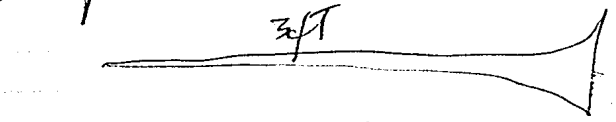
Piano open

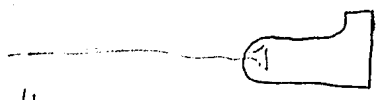
Doubles —

Quality of both Rotten

Deep Red "J"

3 ft



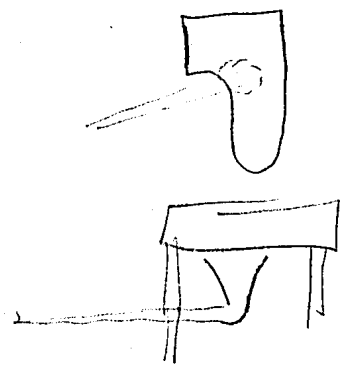


Horn under piano - piano open

Quality for purpose
to I test - not
good enough loud

Very weak Compared
No 1 =

Diaphragm K



Doubles

Quality poor

uneven vacuum def noises

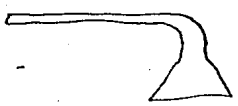
base rig + high

has variable vacuum

Vacuum not great

"L"

Deep Ree

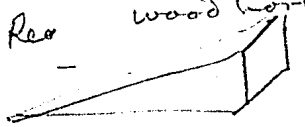


over strings

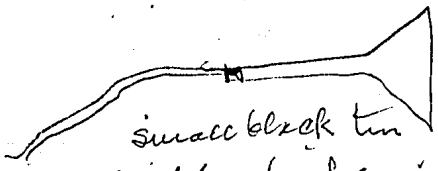
family sound,
bass duly fair — high
dont sound right
Doubles —

M.

Deep Rea

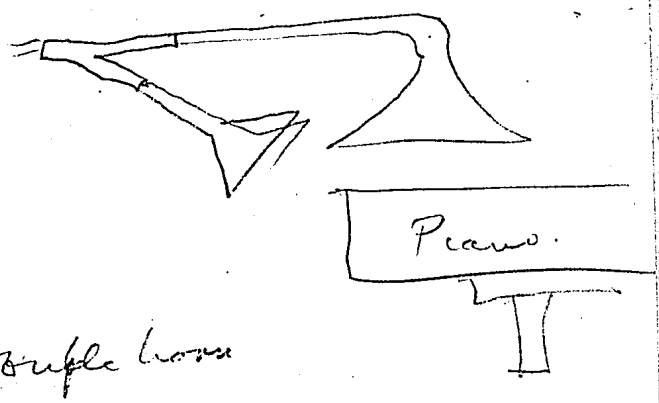


wood horn awful
, Weak ng
Gradely ng.



smacc black tin horn + 1 ft
rubber tube
3 times louder than M
gradely fair —

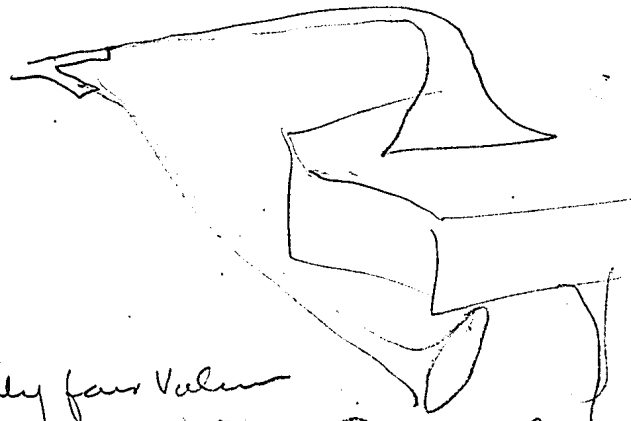
"N"



Double bass

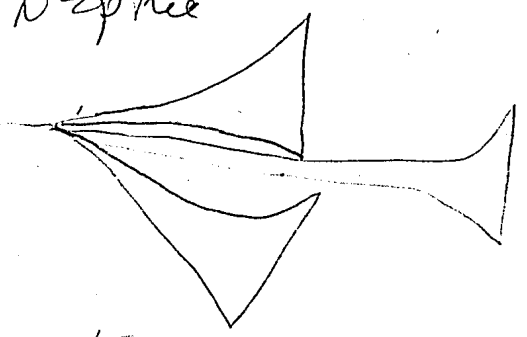
big Doubles - Draft Cut
high note variable volume
Doubles are very noticeable
on certain notes -
Not good -

"O"



only for Value
Base good - Quality
pretty good in this
Evens, up - no doubles
Some high rates uneven
Volume Something in
This

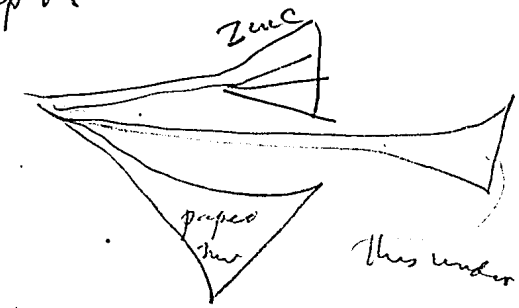
Express "P"



2 top + 1 bottom of Piano
top horn superior each like
long one abt center of Piano
Quarterly not so
good as Q, not so long
as O - uneven Vol on high
One terrible double -
Not promising

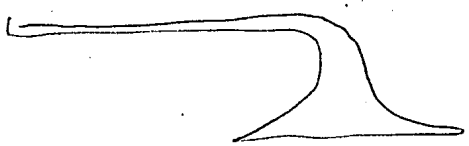
Q

Depth

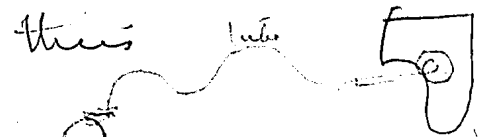


Quality pronun
like O - Something
in it = high s making
to be little known in
Vietnam - one note
grow a double when
player octave

R.



Made from ¾ of ¼ in rubber tubing



tube in recorder

Quality not good - weak

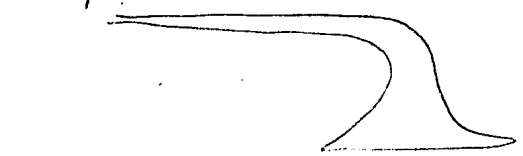
Reg connection to recorder

little louder

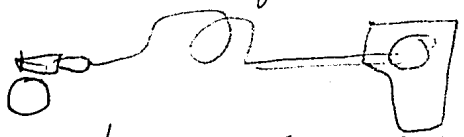
Quality not good -

5

Deep Rec

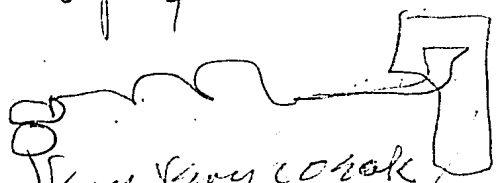


No 1 3 ft ¼" tube from down
closets linings



Lower than R =
Quite bitter - not good

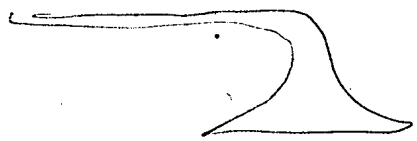
2 – 3 ft ¼ tube
grade



Very very cloak,
Distinctly not good

'T'

Deep Rec



5 ft ½" rubber tube bent horn or trumpet

No 1 Single note - not very loud Not good

No 2 Vent in end of horn —

Double the Volume

Shall investigate this —

"U"

D Exp Rec

maximum 5 ft ½" rubber tube best horn at maximum horn down close to strings – no vent – Doubles base better than high –

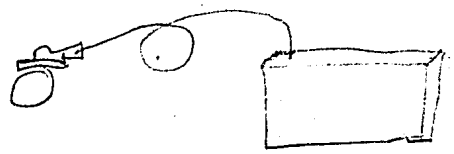
Note slight Deluxe T-shirt in location of vent

No 2 vent at junction of tube + horn

10% louder –

+ bad Doubles & unwanted on high

Deflector "V"



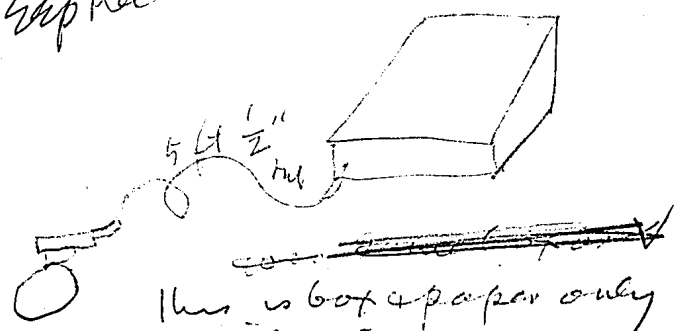
Wood frame with drawing paper stretched both sides drum tight. #2 spaced 1 inch apart 1/2" rubber tube 5 ft long

Probably Not good
Uneven light — weak

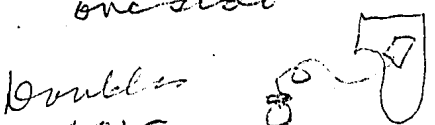
No 2

Same as No 1

Drop Rec W



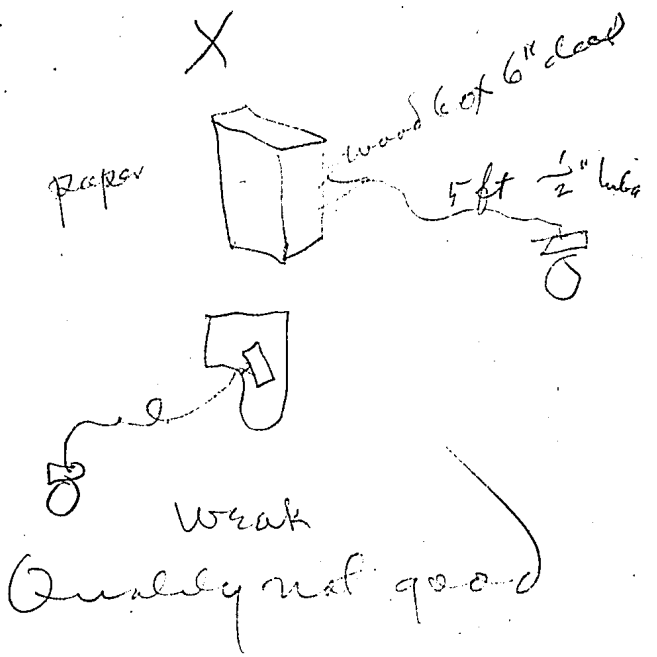
This is box + paper only one side -



Doubles
No 1 -
Weak - 4 ply at bottom
to double Quality proof

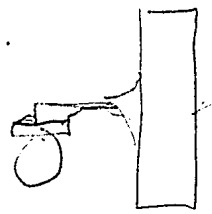
No 2

Doubles - abt Same as No 1


X
wood 6 or 6" cool
paper
4 ft ½" tube
weak
Quality not good

'Y'

2X2ft X 6" deep



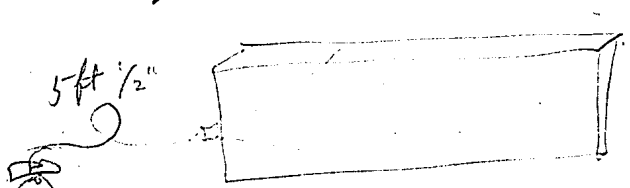
proper drawing paper

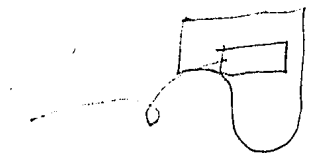
Made with Piano close
as possible

Weak -

Quality not
good -
not necessary

11 Z Box 3ft X 13 in X 3 inch

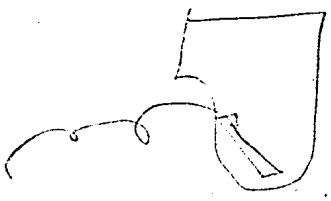




KOI —

Very Very weak Quality

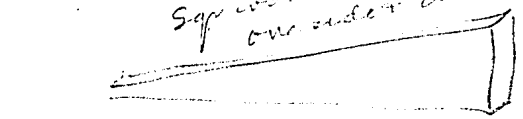
good

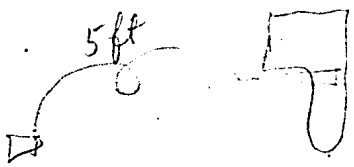


Aboutsame —

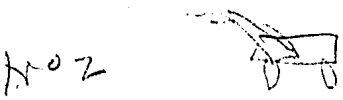
AA

Spruce board from Bumper on one under end





Very Very weak
Quality of wood —



No 2

Quality not good
Double —
~~Very~~ weak

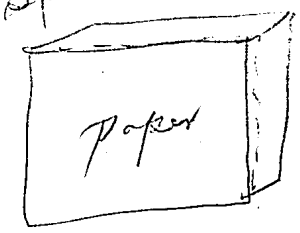
BB

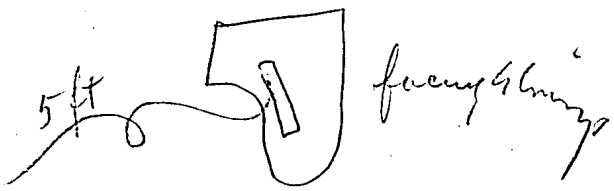
1 1/2" plank 16 x 15"

3/5 bending around

Solder to form

Optional





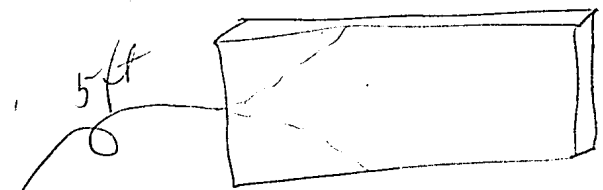
Weak Quadpoor

8" wide like piano

Close as possible

Not glued

CC



1/8" tube piano close as possible

Wrak — Quality not good

DD

Dep Rec

6 ft of reg horn connection tubing Corked tight at one end + laying over frame of Rec and just above strings

1st Single.
2nd pt Adams

Cant hear it

EE

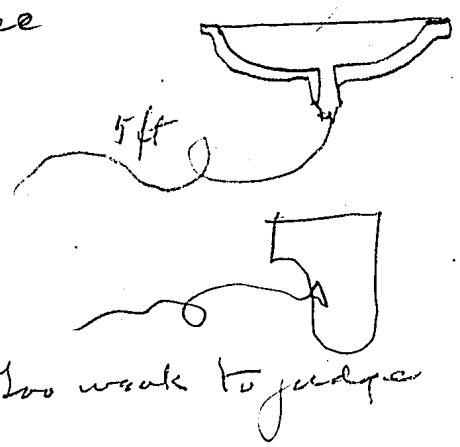
No 1 16ft horn Tubing
Corked at end
Can hear it & quality appears fair

No 2 open Cork out
Louder - Quality not
good —

FF

Strep Rec

paper

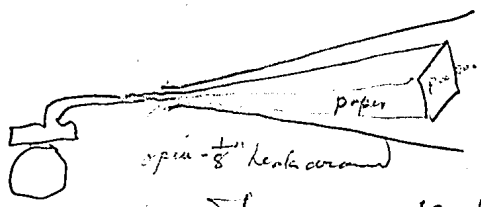


Too weak to judge

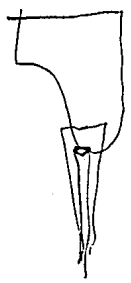
#2 - short tube 6" —
flame close as possible —
too weak to judge

GG

Drapes



Wood horn made with paper on one side & Find



family loud, base good high not so good - Quality four no double

HH,

Senator Ree

7/8 X 002

Double horn on w GG =

full doubles - wheeze

Buss good - no doubles

Easier —

Loud (Very)

Dup of above with NY Recorder

70% of loudness of above no

Doubles or wheeze - Quality

good — This seems to show that

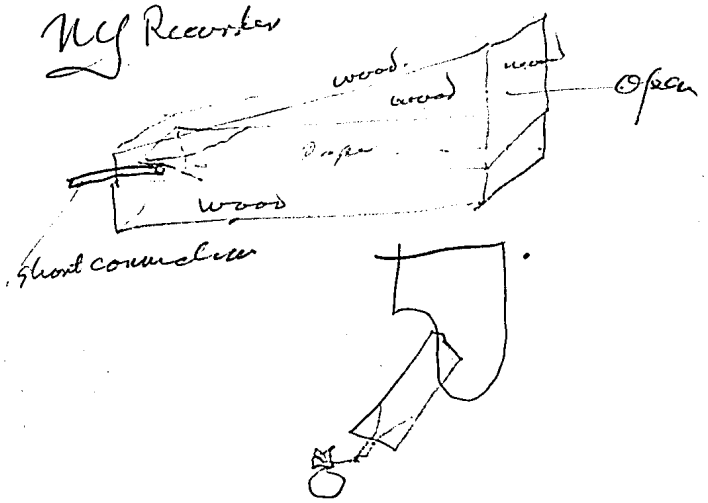
Mrs arm is not held right on Senator

Ree + droplin unable to hold it + to drop

= + makes wheezes + doubles

"I.1"

NG Recorder

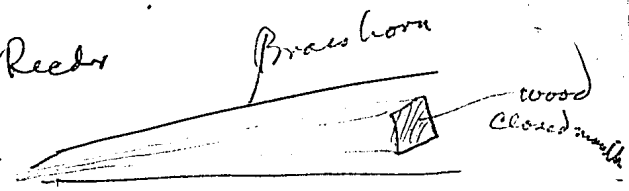


Weak — Quality change
Metallic twang of strings —

Dup of above with
Sensitive Reeds =
Twice as loud —
Quality change — not good

J. J.

My Reeds

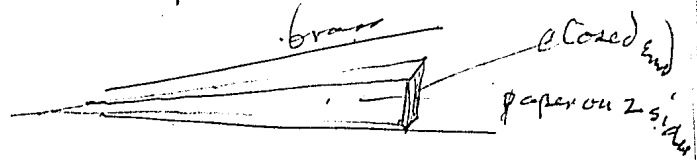


Tried several positions
(Thru the beat.

Not very loud Quality good - no doubles

Very promising

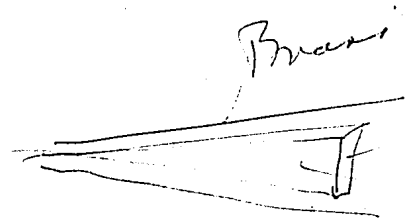
KK



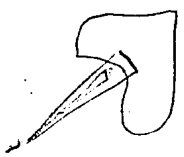
Seventeen Reeds

Pretty fair quality no
double or reeds —
not very loud

Dup My Recorder
Quality fair —
1/2 Volume of above



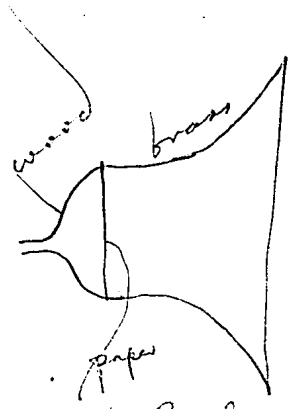
My Reeds



Quality Excellent
not very loud - even Vals

Dup with Sensitive Reeds
Some volume - good tone
Quality of Flute like volume
good - Even - Fairly loud

Pronunciamento

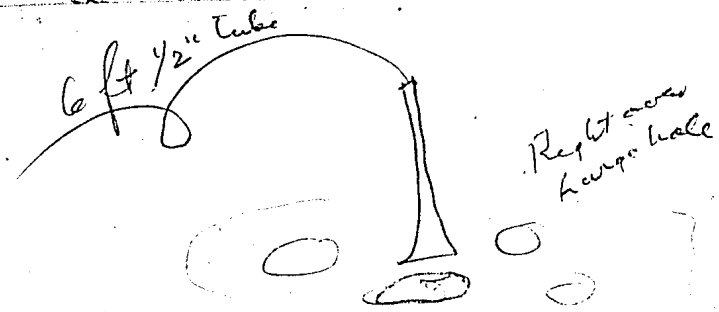


Sensdwer Reader

UQ tweaks notes around – Curious

Dup –
UQ Reader

Wreck – no good

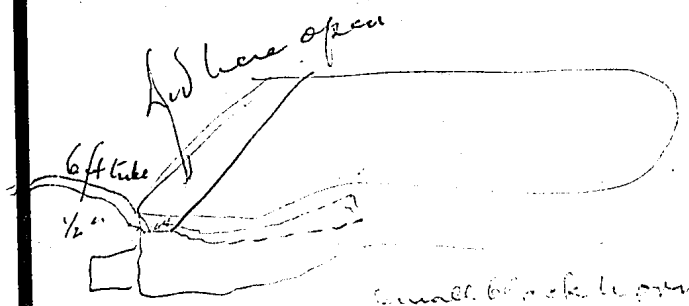


1 My Reading
Tendency to wheeze, family
loud + only scale reading

2 Deep Reading
not quite so loud as I don't
usually use tendency to
wheeze

3 Sensation Reading
Very loud — several big
wheezes —

Deep is supposedly best
for getting to wheeze



small bit of tube to screw

top screw down over strings + under lap

No 1 Sensitive
Very loud, few slight voices seems good for the big Valleys

2 Big Reeds
3/4 of loudness of No 1 inclining to voices

3 Deep
only slight inclining to voices in one place not quite so loud as No 2

"LL"

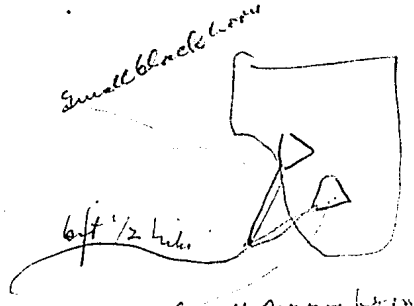
Dup of last page
but all lids down

No 1 Drop Reeds
not so much swell
wheeze a little —

2 Dry Reeds
Very little swell
big wheeze one note

3 Sensible R
Very little swell — loud
& big wheeze

"MM"

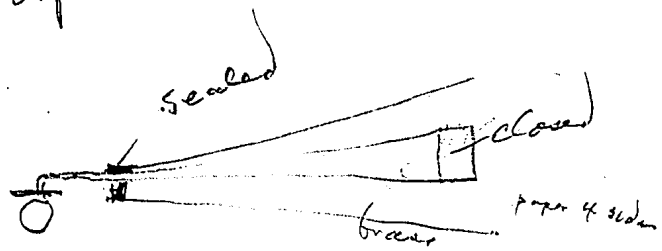


My Reds — Horn closer to clamps —

~~Tone~~ Not very loud Quality pretty fair — no doubles or cobwebs — long tube Eventually Coils of horn Volume Considerable

~~Dog~~ No 2 Sen Reeds
No wheeze on scale
Tone loud on line
would not greet only shows tendency to cobwebs

Apl 20 —



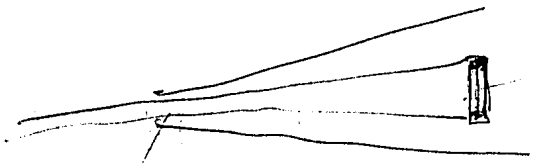
NG Reads

Base fine – mud vacuum muddy
high not very good to heavy
Sand quickly good, risk, +
reduced —

Sendees Reads Wheeler
Some risks of Chem
on scale Outside
Wheeler good —
Leeds —

Disp Reads – more Even
than others 1/2 loudness
of Send & lower than NG —
NG. 62nd Quickly

April 22



Seaside Rec

Land-bases good
high has many doubles
squeaky voice
Quickly fair

Deep Reeds | high not good
1/2 Value of
Sea Reed

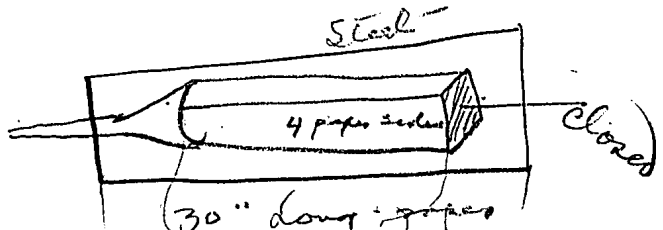
Mtg Reeds
Better than Deep —
Quickly not Succeeded
back from high mid
Establishment

My Recorder

Same as page back only
small end outside funnel
Closed on small funnel
1 week, Quality NG

Dept recorder
Weak - ~~Less~~ volume
Quality slightly better
but NG

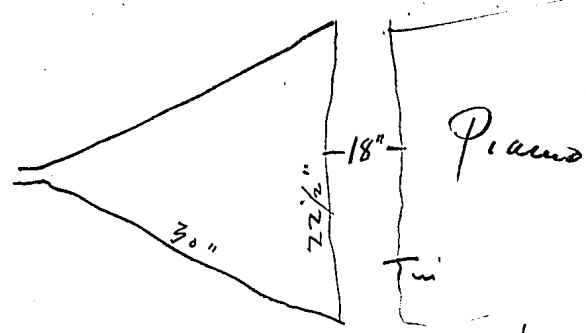
Rundown Reels
Forward motion
Quality four of which
a doubles were out
of quality would be
good



Wy Reeds
Little weak, but
quality pretty good -

Deep Reeds -
Not so good as Wy

Gustave Reed
Wheezy Quality
family [illegible]
[illegible]



Big wrong angle horn to test before we put on the 2nd E Coeur horn

My Reeds family even
Scale only
no double

Deep Reed
alt same value - not so even
scale only
no double
3 note slur + whimpy

Bensdorf K

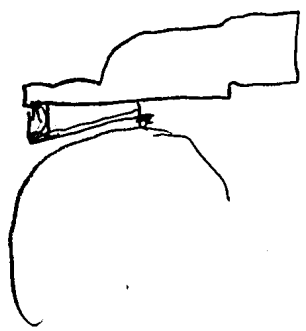
Lungs Val no coherence until high notes — very labile
difficult on any — not reed

Ditto as on previous page
only dif is horiz right at
Edge of Penna

NYRe
no borders - not
even as bord

Diego -
no borders

Kiss always for
Ann R

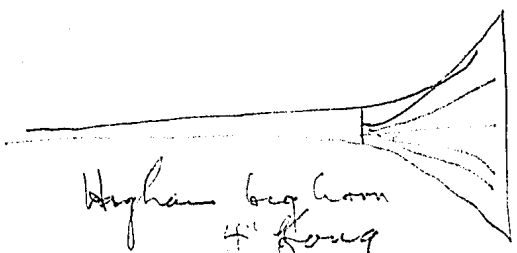


.002
dia

Same horn as previous
2 pages — Recorded
negative lens (1E)
below center of
Cutting Knife

Thinks there more
Even than on 2 pages
previous

Test in Tent -



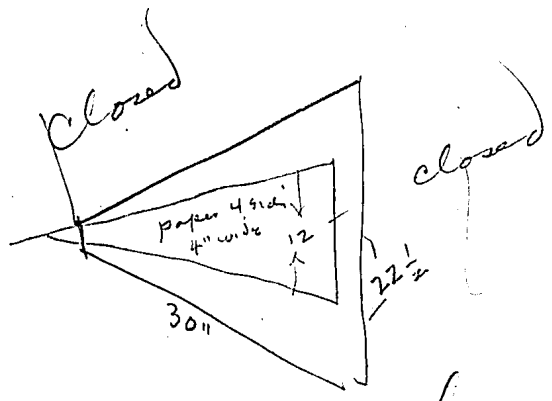
Hughes bugle horn
4" flare

Sensitive Reeds - Webster Upright -

2 ½ ft from back of Piano

fine bass - terribly pumped out, with this - Wheeze - double & high notes.

Wf Reeds - not so loud or so much wheeze - fair quality bass good -



Very wide angles

Russian Reeds

Poor - not very loud

Very Cohesy all thru

Wy reeds Rotten Quality

Whyte-Douglas

Not very loud Wy

Tent Expt

Block paper mache funnel 3½ ft from funnel —

Sen Reeds nearly perfect scarcely any cohesion — few doubles if Alles had been taken 5 ft away it would be OK — Loud unnecessary Loud —

Wf Reeds — good quality only one with Cobol ~~Wh~~ Why a Cobol occurs always ~~only~~ only in Reeds ~~of~~ & somewhere —

Tent Records

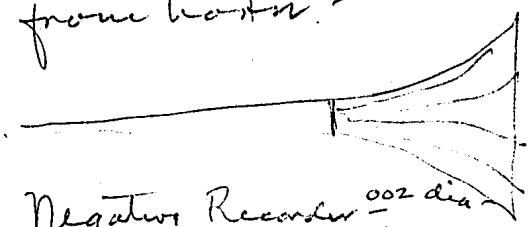
small Tin horn
5 ft from Pickup

Sen Reed — plenty loud Enough — can be 50% less Volume + be OK = quality not as good as paper record horn — has the 1 note that always rattles Think want Lead weight to weight down records

My Rieder Considerable Scratch = quality fair + Loud Enough — There is something in funnel as paper record better Thinner Sharper + louder + less distortion although not as loud as this although much louder than this

Tent—

So far Tent makes a
considerable difference
when any distance
from heater.

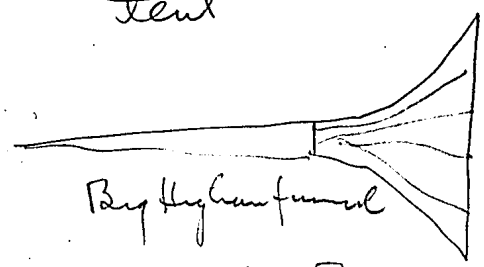


Negative Recorder — .002 dia
Knife edge in tension, I guess
he means

4 ft 6-inch ~~sq~~ Piano —

Not very loud - but loud
enough — Don't seem to
be any improvement over
lower Frequencies using
several doubles & 2 choke
(Inductors)

tent



By Hyland Amund

Senders Receiver

5 ft away

Very loud - reversed
doubles & codeages
Quality fine perfect
Reads of codeages &
doubles out
Base to fine no doubles
or codeages big reverse &
overtones, needles Body jumped out

10 ft away not quite
as loud 70% - very few
codeages & doubles
Quality fine —
jumped out one place only

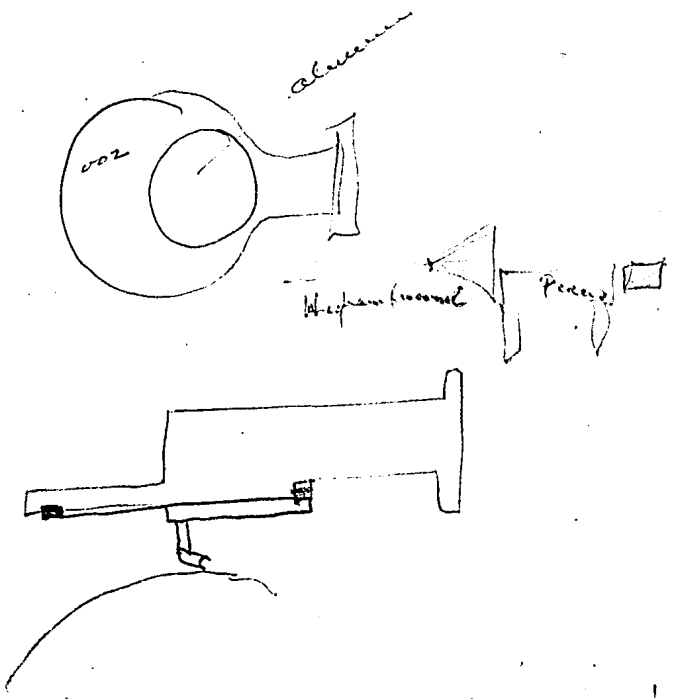
test
Continued

Some bad wheezes on high
2 of them

15 ft away

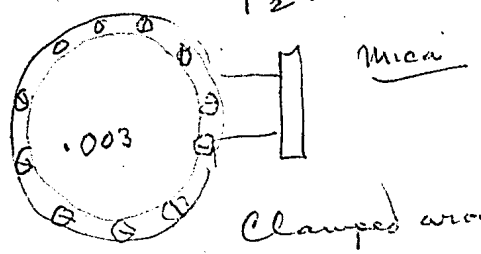
only a trace of double-echoes
in the male – Female good
Think with good player
this recorder a person
15 ft away would be
almost of that a distance

Not jumped out
wheezy doubles.
according to this in
test is due to
jump out or failure
if Reader to track –
hence 15@18 ft with
Resolver Threshold in test is OK

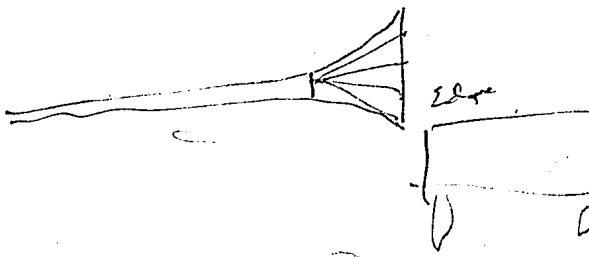


The quality of this is fairly
mellow — The high is not
whistle like but not mellow —
like bass all in my throat
sweet good + fairly loud
+ even all way thru —
Very pleasing

May 9 1912



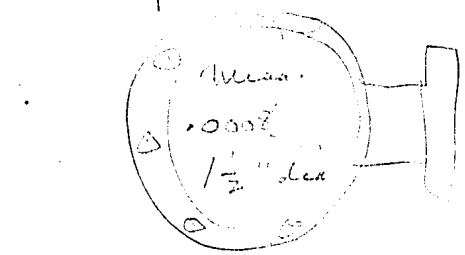
Clamped around Edge brass ring Has rabbet working on already by Mica only



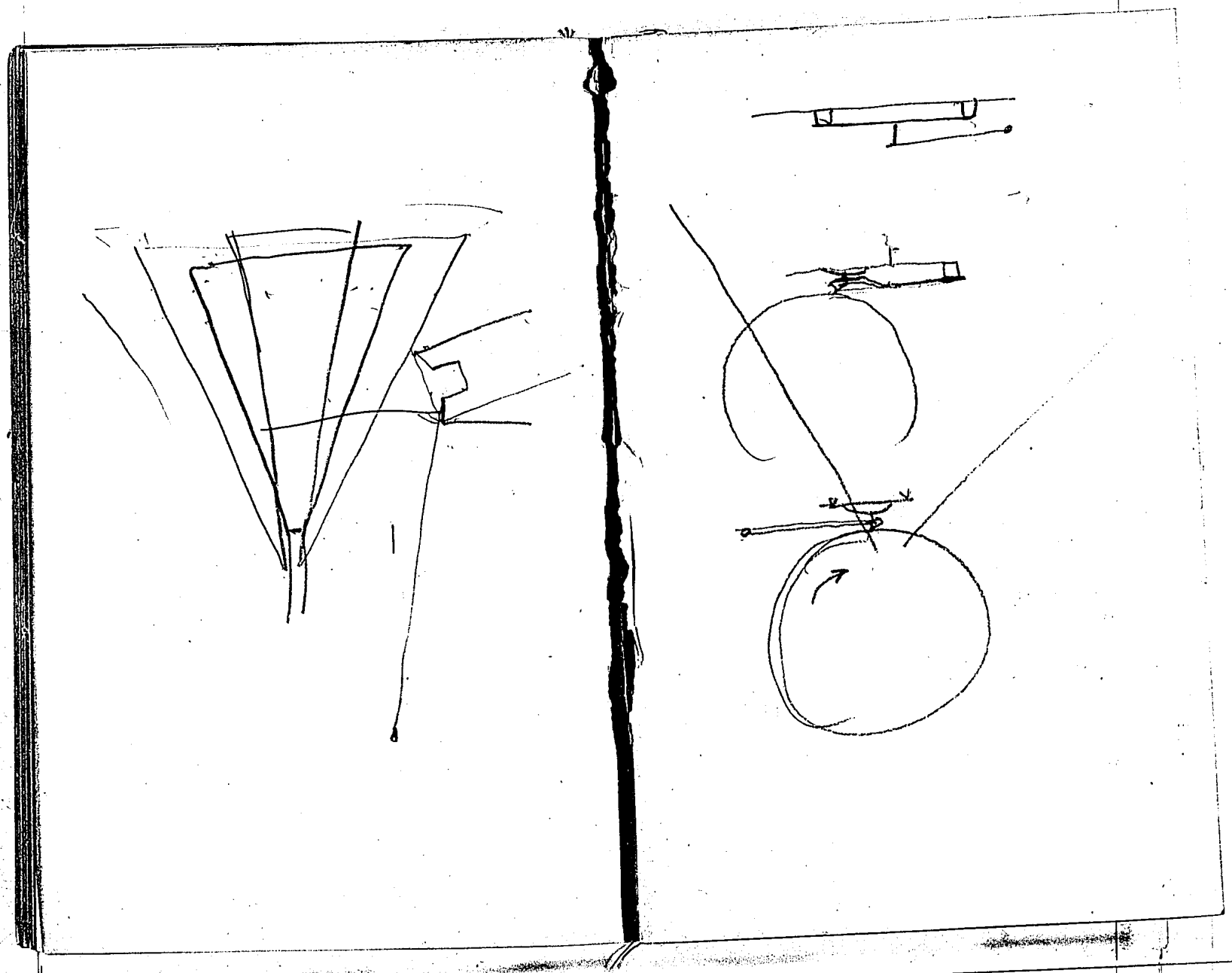
Scale as graded on original Scarcely any sound of silver bell Ever heard, hear it even in very high water Volume good — No doubles or leakage — Apparently, Rubber rings are plenty for a load point — The tone is not good as not sufficient elasticity to give full amplitude to the base waves

probably under .002 Mica

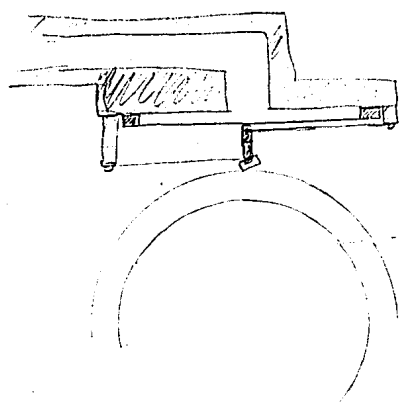
May 14 1912



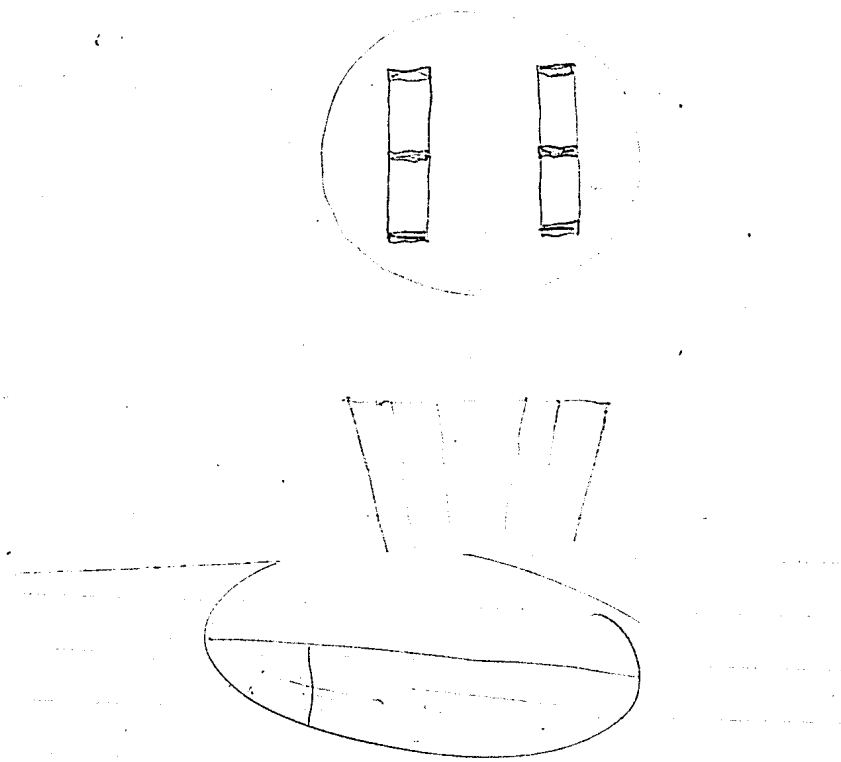
Very loud very good music -
accompanying audible [illegible]
audio [illegible]
of hearing [illegible]
[illegible]
[illegible]



[ITEMS(S) FOUND IN BOOK]



[ITEMS(S) FOUND IN BOOK]



[ITEMS(S) FOUND IN BOOK]

July 20 - 12

Mr Edison

Mr Edison wants moulds made from this two experimental records, and samples of black records from there, as soon as possible

Must have these subs—
Master dye so Phelps
Can make them—

[ITEMS(S) FOUND IN BOOK]

Original Standard Price 100 - #1	Bolting cloth Italian style #2	Bolting cloth Italian style #3	Bolting cloth Italian style #4	Bolting cloth Italian style #5	Bolting cloth Italian style .001 ¼ #6
Piano 10 feet 100	90	100	95	95	110
Chimes 14 ft 100	95	90	110	115	115
Tuba 7 feet 100	95	95	90	85	100
Tuba 14 ft 100	90	100	90	90	110
Orchestra 5 feet 100	Rotten	40	30	Rotten	85

Test in Tent
Aug 24 / 1912
(1912)

[ITEMS(S) FOUND IN BOOK]

Recorder number ↓

H	1	~~Two~~ Bolting cloth, ~~one~~ coat Collodion
	2	Mica .0008 thick
	3	" .0005 "
	4	Bolting cloth soaked in collodion & ~~.0055~~ changed to .004
✓	5	Mica .0001⅝ OK. in test
	6	~~Celluloid .006 Film~~ 2 coat collodion
✓	7	~~Kodak film Paper .0055~~ Bolting cloth, Film dope 3 blankets O.K. in test
✓	8	~~Paper .0033~~ Bolting cloth, Film dope 3 thick coats O.K. in test
	9	Bolting cloth, one coat collodion
✓	10	Bolting cloth & Film dope O.K. in test "
✓	11	Bolting cloth & Film dope O.K. in test but to thick
	12	" " 4 " "

[ITEMS(S) FOUND IN BOOK]

Test #1

No 1 - Cant understand but its loud
Hear music Loudness 100

No 2 Cal 5, about same loud
but heard several words -
Loudness 104

No 3 C 5 - dont understand -
Loudness 90.

No 4 C 5 - Heard a little 3 words
Loudness 86

No 5 - C 5. - heard considerable -
Loudness 110

No 6 C 5 several, heard 2 or 3 words
Loudness 105

[ITEMS(S) FOUND IN BOOK]

Test #1

No 7 = heard 2 or 3 words
Loudness 90

No 8 = 3 or 4 words
Loudness 85

No 9 = heard 3/4 of this pretty
fast — heard good deal also
Loudness 110

No 10 — Considerable heard
but I am getting out to the words 108
Loudness 108

No 11 = only few words
Loudness 100

No 12 Heard Considerable
Loudness 100

[ITEMS(S) FOUND IN BOOK]

Test #2

No 1 Several words Loudness 100

No 2 All of it — 110

No 3. Got none Loudness 95

No 4 2 words Loudness 85

No 5 few words. Loudness 105

No 6 - 3/4 of it " 105

No 7 3/4 105

No 8 1/2 100

No 9 3/4 100

No 10 1/2 85

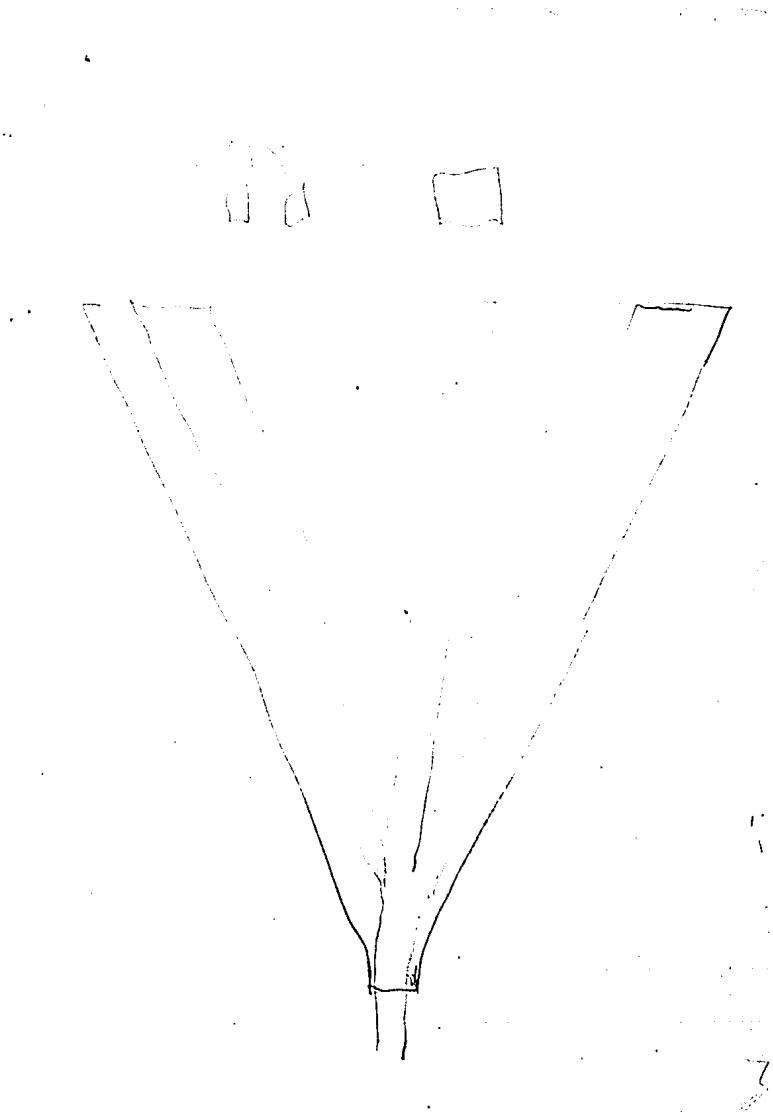
No 11 1/2 95

No 12 1/2 100

[ITEMS(S) FOUND IN BOOK]

May 3-12
ATP

[ITEMS(S) FOUND IN BOOK]



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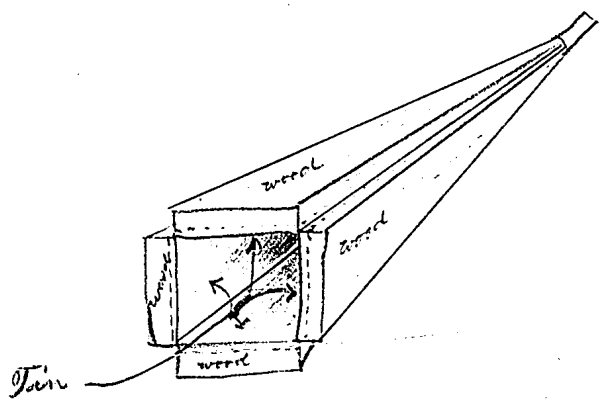

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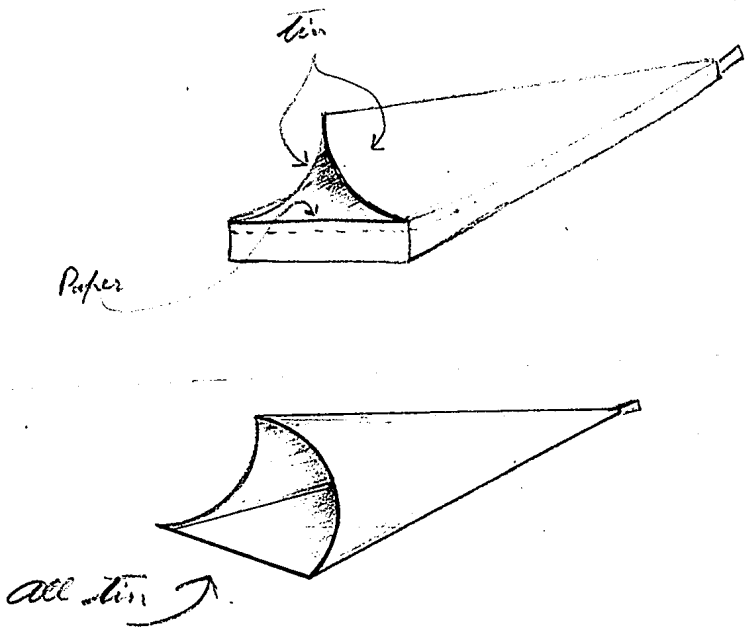

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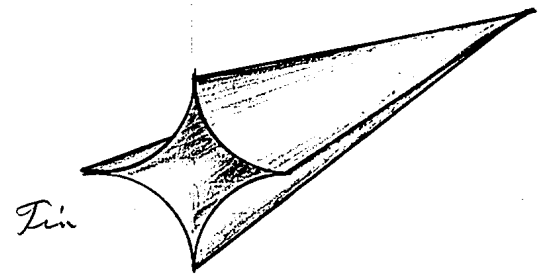

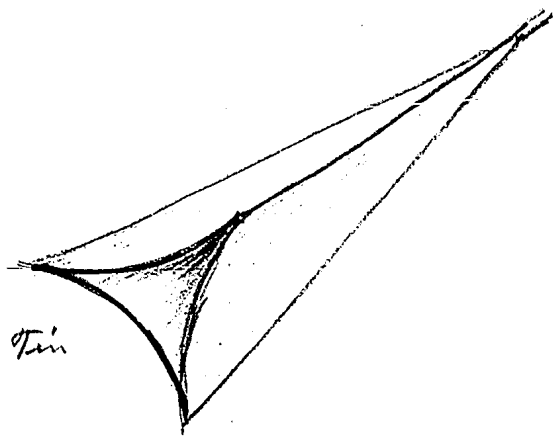

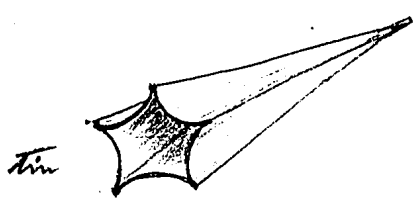

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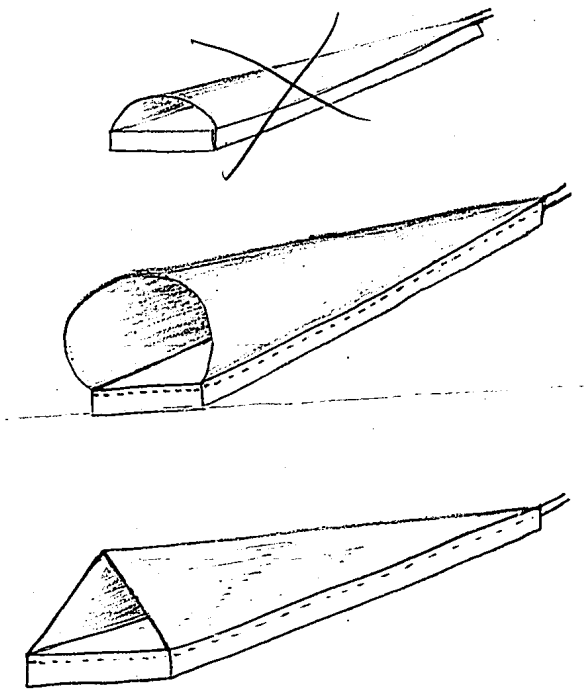
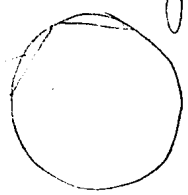


[ITEMS(S) FOUND IN BOOK]

Pierman

Quick beaten skin, wet stretched
Nickel sheet 1/4/1000 ± 3/4 1/1000 plated
Aluminum " " several rolled
Glass – Dunwiddie can grind to 1/1000 from 005
Ivory celluloid heat stretched various thickness
Collodion " "
Gelatin — I have some
Shelled Japanese paper
Shelled Silk thin gauze like –
Silk coated with Collodium
Dalley Can blow glass centers

Cut out



[ITEMS(S) FOUND IN BOOK]

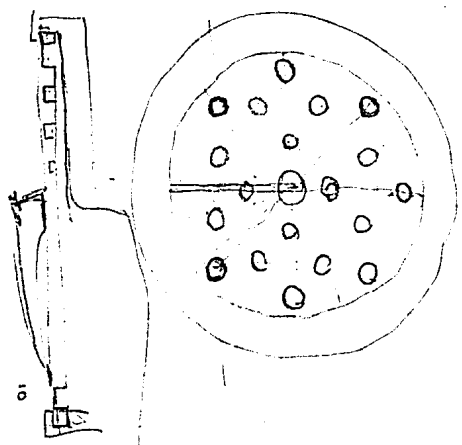
Edge of one horn to the other
12 ft -

1st use Reg horns as now —
put on Carl Stewart then the Ven Trio
+play each — 20 seconds. — Try all
the recorders — 2 Expts 1 Recon
~~2nd [illegible]~~

[ITEMS(S) FOUND IN BOOK]

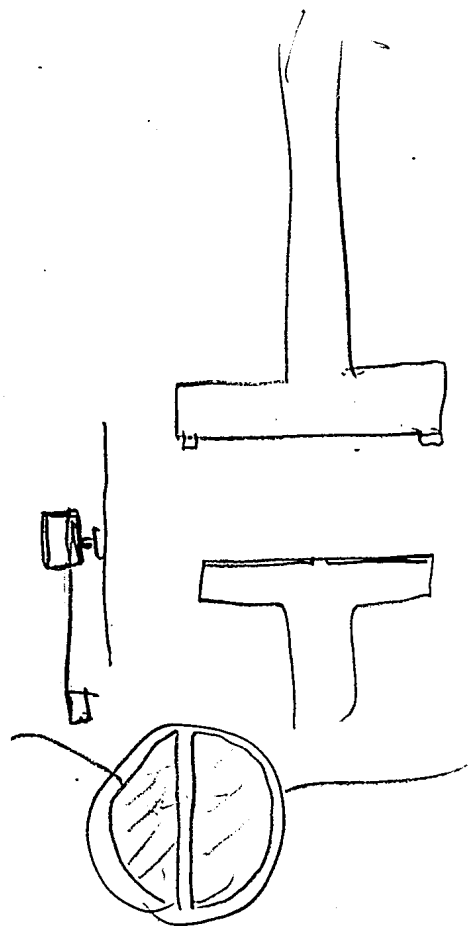
160
4
640
26
3840
1280
16640

52
6.00
31200



3/32

[ITEMS(S) FOUND IN BOOK]



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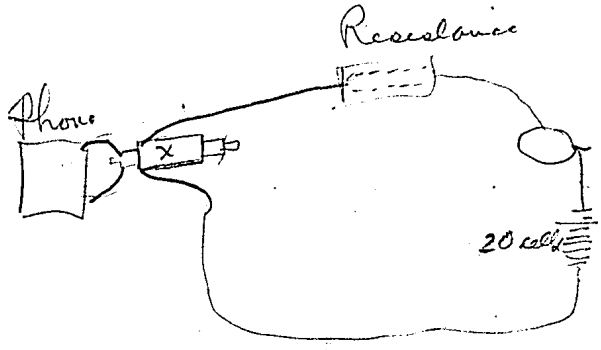
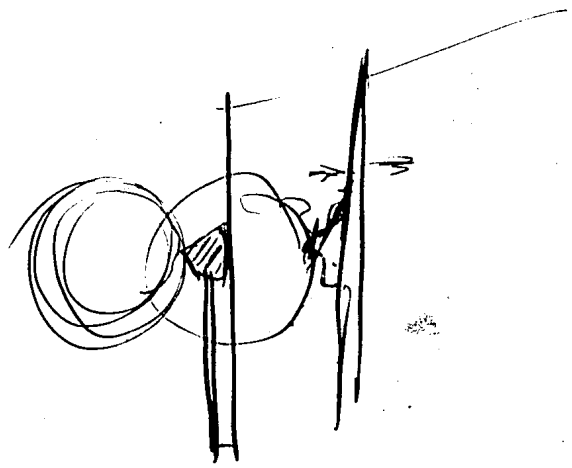


X use a coil. But put the low resistance or primary Coil to the phone side & the high resistance on the line — add 20 cells & put in 6000 ohms

[ITEMS(S) FOUND IN BOOK]



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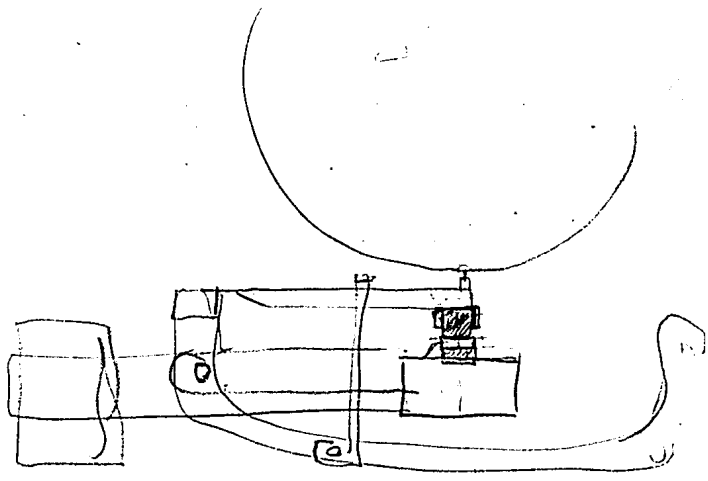

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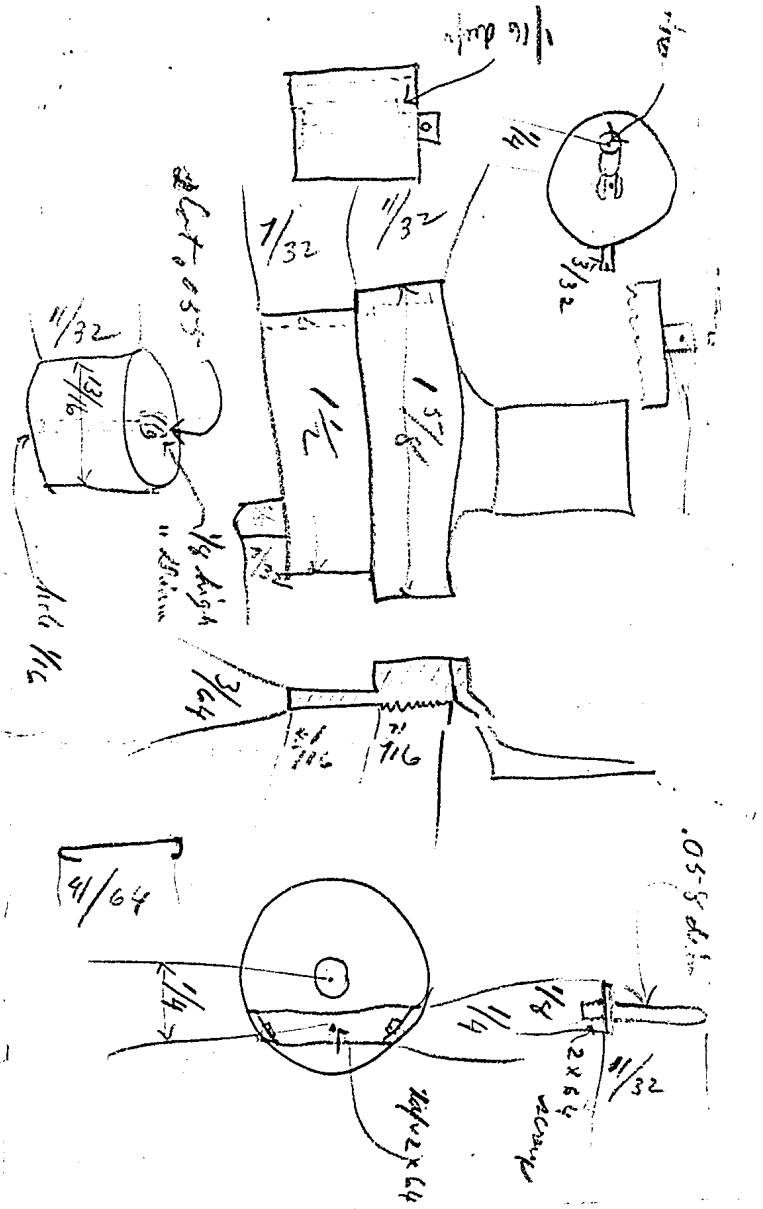


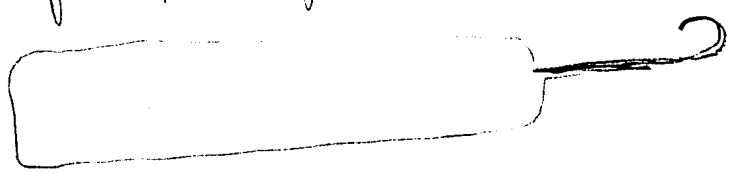
Notebook Series -- Notebooks by Edison
Notebook, N-12-07-28

This notebook was probably used by Edison during the period July-August 1912; the entries dated June appear to have been made in July. The notes and drawings pertain primarily to electroplating processes involved in disc record manufacture. The book begins with notations made throughout the night of July 28th and into the morning of July 29th. This first set of notes ends with the comment "up all night." Included in these and subsequent entries are notes on experiments to determine the best plating solution and conditions for the production of the "master moulds" from which submaster records and working molds were later produced for pressing records. Also included are notes on several attempts to toughen the waxy composition of the initially recorded "white master" discs, so that the first intermediate or "submaster" transfer could be made by pressing rather than electroplating. There is also a comment on Edison's work habits. Edison's notes indicate that David A. Dodd, H. Grimes, Sherwood T. (Sam) Moore, and Frederick P. Ott assisted him in some instances. The front cover is labeled "B." The pages are unnumbered. Approximately 75 pages have been used.

July 28 1912

Experiments to determine best way to plate thin nickel over the Copper Master Mould — our present method which is to put 1 @ 3 amp on for some time so the coats seems to add some roughness in record surface —— also to plate Nickel direct on gold Master instead of Copper & take away with the Copper chlorgecker — or plate Ni 5/1000 thick or so & finish with Copper ——

1st Experiment 1.6 inch surface of Copper brightened with fine



Emery — 2 min in bath having some free acid — 1/2 amp Equals 35 amp on 10"

Very much grazing - Condition of Solution unknown. Covered good Except where scratches which Cannot be more than 1/4 inch and yet there are not plated in balloon Every depression shows no plating -

This is bad on a master where there are deep recessed undulations

The tops of hills plate first Valleys much later

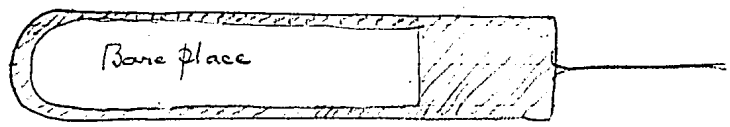
Even pulling it in solution for 3/4 min longer & stirring does no good -

The solution has free H_2SO_4 -

I then took solution plain sulphate Slightly acid + in 2 min while stirring scarcely got with 1/2 amp on $1\frac{1}{2}$ inch square any deposit I then made it a little alkaline with ammonia, strong blowing of Litmus, it covered in 15 seconds

and nearly covered all the bottom of the deep scratches —

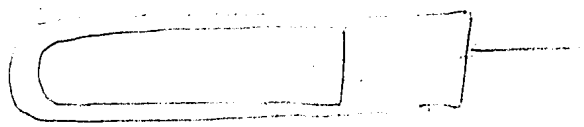
Evidently a highly ammoniacal solution is good for oxidizing a Master Mould coat as this dried solution smells of Ammonia — The coat adheres tenaciously as a covering but it off with the finest grade of Emery paper —



I take a strip & use Condensite Varnish & varnish all over except at bare place & see how thick it will go before peeling — density 1/2 amp on one inch, or 108 amp on 10" drive of Course it gases bad, but appears to Gr plating OK — at end 7 minutes it starting Cracking &

peeling to about $\frac{1}{8}$ of a thousandth or more. This seems to show that ammoniacal solution will make it peel=

put in Reg No 504 solution slightly cooled from working - 10 min at 300 MA - plain Copper Cathode, just covered + treads all, few deep scratches not fully covered. 5 minutes more + it would have been covered -



Other side not varnished by mistake - 10 02 in - 300 MA - 10 12 or 10 minutes Coated - but several deep places not covered its very thin + the Efficiency must be awfully low, Evidently free acid eats it off as fast or nearly as fast as deposited. I will now just make it alkaline -

Now alkaline - perhaps it will not crack off now with the 1st coat from acid solution - 380 MA 10 18 pm -

After 10 min it peels off worse than deposited direct on the copper by scraping fingernail under the flake separates & shows the nickel deposited from nickel sulphate & Kalmbach -

This is a fine way to make thin nickel bronze powder - use a polished Nickel base put on Copper by acid Sulphate as the then deposit from Nickalum 24 504 Sol at 3/4 amps sqr inch & after 10 minutes more or less scrape off mechanically comes off Easy Leaves none behind - Not a trace under Micro possibly by proper manipulation could make flake for Electron the way =

I now make it very ammoniacal 1035 PM - it went to 600 MU - Didn't strip but full of isolated warts, Basil

Evidently too much alkali makes
Knabs

700 ma put on a lot of FeSO4
but there was precipitate back
is probably dissolved
1049 - Still strongly alkaline -
put on a new grid - not varnished
on back - NG - flakes are
3 mm Large / all done off

Used saturated sol Ni SO4 Neutral
1104 pm - 105 ma - varnished all
over except the bare spot Equals
1" about apparently no gas comes
off - = 1122 = peels off not
Cracked in Separate pieces to any
Extent like previous expts
but starts to peel at edges
This is NG 15 mins on

120 ma — 1137 — Saturated $MnSO_4$ with some ferrous sulphate slightly acid, 2% about 8 grams — Solution Neutral, No gas appear to come off — 1152 — 15 min it Cracked & peeled at edges — also it didnt plate at Cathode shows Copper — Creeping over the hot plate of the Varnish Evidently Oxidized in spots, & see little cracking especially along where the heads of Copper Wire is dipped too long or with heat it would not be homogeneously covered by undulating —

Beware

1158 pm — dipped a new dipped cover heater cathode & Allowed into Dilute H_2SO_4 warm for 1/4 min then washed & put in the above solution which is $MnSO_4$ saturated with little H_2SO_4 Set in it Sol being Neutral

off 1213 15 min – self peeled, spots not coated at all –

New Cathode, same solution but 550 MA – on 1216 – little gas comes off – – didnt cover in spots peeled badly – some places covered didnt peel – shows high density not bad

1128 = put twice as much $NiNH_4SO_4$ in as I originally put $(NH_4)_2SO_4$ in – polished just a little the bare part of the Copper with fine Emery – 120 MA –

No peel even at Edges but there seems to have been gas bubbles + these prevented plating thick at these spots, they are plated however – there looks promising & put it back & only had it out 1/2 min washed it so called see with Meop, it was Covered with bubbles when taken out & had to wash them off = Of course are 15

Use this process must rotate rather strongly = no gas seems to come off Cathode in solution, since 120 MA - 1250 look at out for moment no peeling - surface covered with bubbles = out at 1158 - 30 minutes in allow to they started at part of the Edge to peel, it pulls off in sheets. Dont curl much -

On 108 AM - put another small dish of NH_4 Sulphate in this makes 3/4 of dish Fe_2SO_4 sat + 2 dishes of $Fe NH_4SO_4$ = Seems unlike the other solution to make lot of big adherent bubbles the adhere to cathode + dont come to top, Cant see any gas arising = very strong stirring of Cathode in solution dont shake them all off - BEWARE GAS with this process

Solution is now getting slightly acid probably because anode don't work good, Remember the solution is plain $NiSO_4$ but the Iron added is ferrous ammonium Sulphate 120 mg — 30 min No peel Even around Edges, can see Cavities where bubbles were, I put it in again — (Shake acid)

One hour in — it don't peel bending cathode on itself

Only Cracks it it will not strip — I noticed early say 10 minutes that there was cracks I thought they were scratches ~~that~~ plated over but I know now they are Cracks, while there is no tendancy to curl + peel there is a tension — it holds so strong To the Copper that before it lets let go it will contract + crack

under the 1/4" objective you can see no opening in the crack but it appears to be cracks -

I now add another cup of Ferrous Ammon Sulphate, on 221 am - slightly more acid than before, anode not working good - 140 ma — putting in a new Cathode —

look it out to look at it at 233, OK covered no cracks but there were Crystals on it added cl water & cleaned them off in hydrant thunk too saturated, stick 140 ma — after 25 minutes looked under Micro - no peel but its started to Crack all over —

3 am - put another Cup full - 30 cc $Fe NH_4SO_4$ — this makes 90 cc after + 20 cc $Fe SO_4$ — about 1/2 + 1/2 now

Note why not taken hold the transfer longer Say 3 times longer under pressure + 325-hit it get more hardened — Then it will not be likely to crack to Grams Upward. —

On at 3 am — but as the double salt has less Fe probably 60% Fe SO4 in equivalent, 130 Ma — at 310 am —

30 mm in scarcely any cracks but Solution too saturated. Crystals formed on Cathode and precluded plating where Crystal was attached —

Note shape of the Crystals can be preserved as the Nickel plates around them + cap sides Washing in water dissolves crystals + leave perfect Matrix =

Diluted above Solution Considerably + put 1/2 in each poured out + water put in put in two Cathodes at 335 am — just little acid nearly neutral = 140 Ma — probably the Extra gassing or adherence of bubbles.

Note the Nickel Coated Cathode that Cracked (10) the Ni I put on 4 plated 2 or 3/1000 d no peel Turned up Edges & the plated Copper took nearly all of the Nickel with it showing that of was plate 1/4 / 1000 & that transfer to Copper it will be OK Some of the Cracks even showed Copper plated thru —

The trick will be to plate 1/4 or 1/8 of 1/1000 with and Cracking or drawing up —

We undoubtedly can do with the Ni Sol off before going in Cu bath, but even if we Coat Nickel in Copper which is cool don't hurt much,

442 The 5 Cells on

to the Cathode is due to the high Viscosity of the Saturated Solution — in former Expts —

No peel 30 min only few cracks around Edge, didnt take it out, as I think it instantly oxdzs + 2nd Coat Cracks — This is fair result seems to be 1/2 of thousandth thick,

---

New Solution 3/10 Ths Saturated

$NiSO_4$ — Nearly Saturated Sol Manganese Ammon Sulphate Made just slightly alkaline — Use here - a Nickel Cathode Shellac'd On 4 14 am — 150 Ma - Neutral — Sediment in Gallon - recession of Solubility on account some Ions I guess didnt get Enough dealer in — off 450 36 minutes — NG - all flaked off - flakes big

Note

The Ni Anode in the Ammonium NH_4SO_4 salt got very black + it appeared to be coming off — Could blacken from the Ni Eta this way for experiments.

to be run at 100 Ma —

No 11 saturated $Ni\,NH_4SO_4$ 100 pts
8 pts $Fe\,NH_4SO_4$ — filtered not quite saturated so don't crystalize out Nickel Cathodes

No 12	Same	but	16 pts	$Fe\,NH_4SO_4$
13	"	"	32	"
~~14~~	"		50	"
15			75	"

On at 442 AM —

I notice that Solutions are getting cloudy from over Saturation, 515 I took No 11 out not cracked or scaled its fine There is precipitate floating in Liquid

The piece from No 11 Calibrade Calliper all over 3/4 of 1000 of inch its smooth even on outside =

Didnt take Alum out = Area of bare place 2.6 inches density 100 Ma — 38 milamp per inch — 10" disc has 88 sqr inches makes the density 3.3 amperes per disc

No 11 at 5 42 or 1 hour just started peel at lower edge No Cracks Look hard & it came off beautifully white & tough — Peel perfect = No 12 came off of itself in solution white while No 13 14 or 15 all cracked up & worse the number went up — 15 is brown — No 11 is perfect, now go the other way —

MnSO4 neutral put in about 1/4 back of 7 H2O MnSO4 — then distilled so no crystal will form, will put on 50 Mil amperes from ~~5 hour~~

One hour —

Nearly neutral on 520 —

6 20 AM — Cracked Longitudinally

NG = bright,

Those Cathodes were Ni + Vermuka!

2.75" Gr

So far 100 parts
$NiNH_4SO_4$ + 8 parts
$FeNH_4SO_4$ with dilution
of 1/4 to 1/3rd with water To
prevent hydrolysis, with a
density of 100 Ma To
2.75 Gr/liter in electrolyte
the best giving in 1 hour
3/4/1000, Tapped the
Cathode To dislodge
bubbles — but rapid rotation
will be necessary as effect
of bubbles in electrolyte —

Also def must be free from
precipitate,

Used 1½ to 1½ amp 1 hour for
10" disc Ge oxychloride to Copper —

Even 12 hours work showing heavy range of Gr

No 16 — Saturated sol of $NiNH_4SO_4$
100 parts of this to 6 parts.
of $FeNH_4SO_4$ — on test

No 17 — same but with 4 parts
of $FeNH_4SO_4$ on test

No 18 same ~~but~~ with 3 parts
$FeNH_4SO_4$

No 19 = same ~~but~~ 2 parts
$FeNH_4SO_4$

No 20 Same but 1 part
$FeNH_4SO_4$ — on test

Each solution after making
add. 1/3 of its bulk of
water, let stand few minutes
+ filter

On at 615 am 100 Ma—

Noo 12 13 & 20. Had their NH_4SO_4 diluted by adding to 200cc of saturated sol 100cc water then, 200 cc was poured into each cell the balance thrown away so sol is not weakened, solution added after each 200 cc was put in case the Concentration of 20% of $Fe_2(NH_4)_2(SO_4)_3$ was reduced - it increased back but little, it was well mixed -

Notwithstanding this dilution the solution at 640 are cloudy probably precipitate perhaps the anode not acting the free acids decompose the Electrolyte

Beware of Cloudy Solution find out how to stop it -

650 - Noo 16 & 17 started peel at one edge Noo 16 the most 17 only a little, 9 pulled both, 17 was perfect 16 nearly so 20 was still OK -

put 16 + 17 back so 20 could go further, 17 is very fine sheet both sides —

Beware, dust, or pressure makes depressions - or thin places —

No 20 peeled at edge at 7.05 cm — Came off perfect sheet, Little more spongy than 16 + 17 - fine surface on both sides — 7

Will filter the Solution free of it clouds again — When Current on —

No 16 & filtered & then put in ½ small porcelain knife dish of Glucose — dissolved it

17 Only filtered —

20 Left it alone as it was very little cloudy

Note

No 16 17 or 20 will permit of large sheets of Nickel being made & stripped off from a polished Nickel Cathode & about 1/2/1000 thick probably less —

After annealing in Hydrogen they will be tough & soft they are in No 20 near Chas now —

Started at 100 Ma at 747 am

1 Hour — 16 — peeled bad — had glucose = 1/3rd is not peeled

No 17 — just flecked only peeled. rather bad —

No 20 left alone is still fine & good,

I left it in longer —

Dont understand this —

~~No~~ all slightly cord — No 20 least No 20 has not clouded any more

No 17 did not cloud —

No 16 clouded a little,

I wonder if plain Double Salt would do just as well —

The strip 1 hours No 20 at 100 ma
Peel in Copper - stripped off
with Copper which it adhere
Tenaciously — There has been
Cracks in it as I can see in Micro
its about 1/2 thousandths thick

Think 1/4/1000 ni in 20 Solution
Could worked on the gold alone
+ quickly transferred to Copper
+ plated at density of 75 @ 100
ma per 2 3/4 inches surface —

But to plate see nickel
further Expts necessary

to get 1/2 To 1/1000 on gold further
Expts necessary —

Up all night —

29th June 1912

1/3rd diluted Sat Sol NH_4SO_4 —
200 cc & 4 cc of Saturated
Sol - Cadmium NH_4SO_4 —
on 3.28. Rm - 100 ma

Dup with 15 cc saturated $CdNH_4SO_4$
on 3.30, pm —

Dup 30 cc $CdNH_4SO_4$ on 332

None any good —

June 30 1912

Test for plating Ni, deposit on already Nickel mould which owned corresponds to gold mould in case of cracking or peeling —

Time 4.59 pm —

21000 cc $NiNH_4SO_4$ &
250 cc $FeNH_4SO_4$ -

Ni anode — a Regulus rod and mould already Nickeled — old mould — packed Victoria Lime

Crack metalled 2 Cells —
Growing 2 accompanies —
it stopped last heard termed Crack tell bad Contact was fixed only ½ minute heard

Crack Maker 42 Rev min —

Temperature Solution when plating 81 = ½ abv —

Nitric Solution is clouding slightly from the Fe precipitating, it will have to be filtered each time
Started 2 amps full —

OVER

June 30 1912

After 20 minutes and quite cloudy from the precipitate scarcely see the discoloration when front put in ~~the~~ it was clear

Current after 20 minutes flickers between 1·8 + 1·6 · all resistance out except small section of Carborundum Rod + think up hard

It needs 3 cells to give 3 amp + something to rely not on.

Perhaps it wanted 6 cells.

Solution I found is slightly acid = it was neutral when started =

June 30 1912

Made Ni NH_4SO_4 sol – put in 1rd or 1/4 of $CuSO_4$ – plated out Copper – it was acid – I then added NH_4 till precip nearly then little more till quite blue think must precip dissolved – then is highly alkaline – Nickel Anode plates out bright – Count days of any Copper in coming out watch it – Can tell in 1/2 hour because then it will crack if no Cu goes on watch it –

230 MA on at 9 17 pm
at 9 25 Examined it Ni ok but dark lines, little fine specs copper plating out expected why – added more NH_4 very much more Now 280 MA –

Copper keeps coming out for hours Even on dead Except Ni NH_4SO_4 —

June 30 1912

I now take 1% NH_4HSO_4 + add large overdose NH_4 so it smells strongly No precip — plates fine on Copper — I now put in a Nickel Electrode with Condensite Cover — 9.52. pm — 200 ma -

Looks fine at 10 pm —
at 1006 230 ma —
Does seem to depend much on — the Varnish Came off by excess alkali dissolving — Use Varnished Cathode with Paraffin in Benzol

While washing I put in — 3 or 4 grams of Cadmium Sulphate Cloth dissolves in NH_4 and the Solution is very alkali it makes a fine solution — 450 ma — seems almost change deposition Nickel changing very little yet — on at 1028. 530 / 500 ma

Only Cd appears plate out fine and on Zinc — Evidently reason I/2 Treat in French Mn Sol to dissolve the Cd — very convenient —

June 30 1912

No use Cd dont work —

Now use $Ni(NH_4)SO_4$ with Sulphate Zinc about 2 grms or less + put it in Sol + dissolve then add NH_4 till highly alkaline — $ZnO(H_2)$ in sol in NH_4 —

Its plating out — 200 MA — ~~now 140~~ seems to be fair tho darkish — but micro shows fine grain —

Put in New Nickel coated with Graphite from Bengal — in above Zn Sol On at 11 Rm 140 MA —

1117 200 MA - shaking dont change it

Let till probably but little gas 1130 - thought it had not plated looks dull no Cracks = but Ruffs at Edges chipped off piece showing very thick deposit as its brittle it may be all zinc — if not its fine = sticks strong to Ni Cathode — no sign of peel —

June 30 1912

German Ni Plating Sol 200 cc
100 CaH_2O_2 on 12 midnight —
110 ma — 2 Edison 513 Cells —
Now 12 12 am 600 ma —

German salt = peeled (1e) cracked
but very thick & put in fresh
Cathode & Rod & Recoated
200 ma — on 1227
Just started peel at bottom edge
adhered stronger than the first with
5 cc ferrocin — but there was cracks
due to gas bubbles which were
not out more 30 mem as same
as mem out 1 hour and load 200 ma
weighed 100 — The German Nickel
is not so pure

Callipers average 8/10 Ths of
1000 whereas 5 cc ferrocin was
only 4/10 Ths —

Blushed Ni Cathode with Copper
6 amp per 10" deep 5 seconds it completely
Covered then put in German Nic Sol
at ~~210~~ 300 ma 130 am — of 235
was 330 ma — only peeled one edge
Copper Came off with it See 2 pages ahead

June 30 1912

200 cc Sat Sol $NiWHg_5O_3$ diluted with 100 cc H_2O Made neutral to Litmus — 5 cc of saturated Ferrous Sulphate added —

Run 1 hour + 5 min at 100 ma — Sheet Then clarified strip off Came off perfect = The solution was cloudy from precip from minutes after starting — Sheet Calliperd — It was bright on outside as the inside against the Cathode — Calliperd 4/10 the of thousandths —

The 10 cc Ferrous peeled in 30 mins
15 cc 20
25 cc peeled + fell off in some time less than 20 minutes — while acid Solution gave no deposit + Ferric Sulphate 10 cc gave a worthy deposit not very thick that I cannot get off — THIS IS PROMISING —

June 30 1912

Neweschem Gold plate colite
Mearley blush with Copper till just
Covered then put in Nickel plating
bath and plate Nickel ½ Thousandths
thick on the Copper – Then put
in Copper bath & plate to full
thickness

[illegible]

pour in Copper Solution use was
for dissolving Copper from
Nickel flake & then poured on
Nickel surface 10 Minutes then
then use above put it on surface
of Mould on was do now
No matter how thick the Nickel
is it does not alter the surface
The Mould can then be polished
with Viennas Lime —

June 30 1912

German Salt – Shaped it off its
quite thick Its 2/1000 thick
showing that Copper is going to hold
it from Cracking

Used fresh solution German —
I notice its little acid & the one I
took off & threw away was exactly
same density —
I Coated the Nickel Cathode
Entirely over with Copper
dried it between blotting paper
& then packed it with
the Parallels — 300 MA
on at 305 am — 345 OR Got
found some Crystals of Salt on
picked them off by finger Nail
& poured acetone Solution &
dissolved it with water —
300 MA is about 8 amperes per dive –
4.05 only a small turn up at Bottom
edge 1/16 [illegible] thin – Coulpers
1.3/10th Thousand

Simple Mearded
X

This was a scheme on other
gauge working —

The solution after 2 hours & 15 min - only the edge was 1/8" was turned up - it stuck to the nickel very strong all over must have taken a 1/2 to 1 LB pull to strip it — when it was off it curled up two whole turns showing it is springy

I guess this could even beat the German as all the know tried German at 100 Ma —

The above Coulometer 1 2/10 Coulombs — marked XXX has better surface on outside than in —

Used 200 cc Ni Nitrate Sol'n dissolved with 100 cc - run it on a parallel Cathode set 100 Ma for 2 hours on 1/4 inch edge turned up - after 2 hours — see opposite page

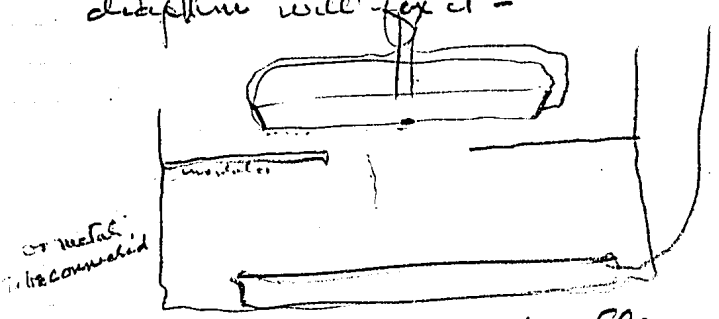
The same as above solution with 1 cc Ferric Sulphate run 2 hours didn't curl up at bottom Edge like all the others but curled along sides also split a little — it was OK 1 1/2 hours at Coulometer 1.4 Coulombs Think it comes off quite hard from Nickel but cake off metal — Its just as shiny on outside as inside, in fact a little more so Sample marked XX — it has little warts —

This is strange that so small amount of ferric Iron should do this - The solution clear but large white sediment fluffy at bottom 1/4" thick

Aug 1 1912

Experiments plating Copper thin blank 2.75" wide 300 Ma does it in 30 seconds — 45 seconds is safe — 1 min sure —
2 Cells Storage Batt —

In plating on gold it proceeds from Edges + goes slowly — hence anode with get thicker deposit which is good for new process of blanking with Cop then Nickel 1/2 1000 then Copper to right thickness + then dissolve off blank Copper by flash solution Thenk a dissolve will fix it —



This would require connecting cable Exactly to get flat edges

4 minutes at 35 Ma - very light deposit Can use Nickel then it. This is 140 for 1 min or 280 for 1/2 minute which is not as good as any where near it as 300 Ma for 1/2 minute —

With Ni strip 2.75 inches sqr surface + density of 310 Ma — which I select it and with fine scratch + as with sides + all else has about 100 Square inches This would be 10 amps for 10" disc a proper plating density for 16 Baumé German Solution,

Tried Submarine Silvered, Cent it was day old & practically got oxidized —

Put it in Copper.

3 Amp ½ min — only a Few Crack at one place
5 Amps 15 sec
10 " 15 sec Copper only around part of Edge
1 min —

5 amp 1 min just Copping Crack a little in middle, Silver sections evidently out covered or thin place high Resis —

5 amp 1 min Blacked little more not ½ Coated

5 amp 2 min — some part out covered — Sharp Edge the Silver broken for several inches Current how To travel long distances from wires

5 amp 2 min
5 amp 4
5 " 2
5 " 2
10 " 1 min

Total
1 amp for 1 ¼ hours

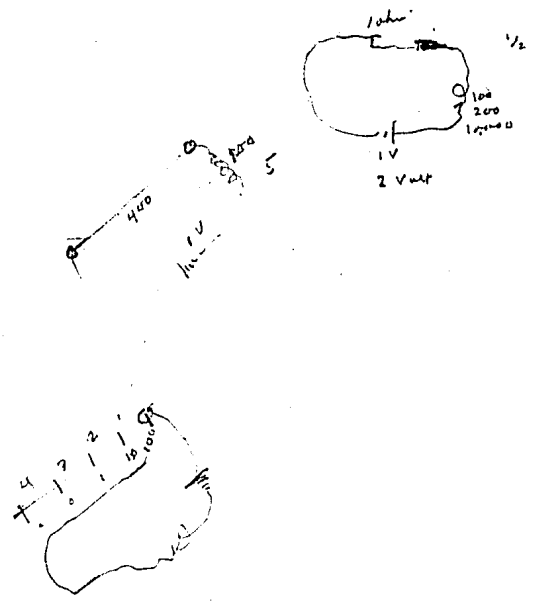
240 ¼
1.20

This barely covered it there were places where you could see the ~~Silver~~ Silver over several inches area but coppery aspect a few spots 1/16 dia where could see Silver bright,
a band around 1½ wide ~~all~~ nearly all round just break coat Copper

We then put it in German Nickelstar.

Started 12 52 10 amps Ended
1 12 am — 10 amperes. Constant
~~Silver~~ no peeling - one or two places along scratches where Copper deshut plate to silver it appeared as if nickel turned up slightly. one place 1/4" at Edge turned up considerably

We then put it in Copper
10 amp rate
Dof for 2 min not coated
good — then 5 min — 10 amps Coated
OK but could still see thinness
at spots



Took it over to Grummer's he puts it in his Copper bath to make a working mould after I have developed off the Copper —

Dissolving Copper by KCy & H_2O_2 off Nickel parkerized 2.75 - makes 1/2 amp 2 minutes

Solution 75cc of a 5% KCy Solution + 25cc of a one percent H_2O_2 Solution —

It looks as if electrode should be reversed as it eats Cu very much faster

Copperred it again 1/2 amp 2 min put in Cy at 2.52 -

Copperred again & put in will not dissolve 3rd on 5 Sqr makes limit for 100 CC

2nd Solution 50 cc of 5% Kcy
50 cc 1% H_2O_2

Eaten 2 Coppers 2.75 sq inch
Each - 1/2 amp 2 mm coat,

3rd one now in - just about as last one took longer 3/4 hour
This is the least, as 2 75
3
2.25

8 sqins inches for 100 cc

by using 5 Elec plating at 1/2 amp I found the most Economical, I now put on a 1/2 mm plating at 1/2 amp finally a 2 mm 1/2 amp - been on 1 1/2 hours on nearly gone,

I notice the Solution used on 5B for dissolving flake Cu leaves a colorless highly Refractories basic salt on the Nickel + colloid Cu which dissolves its Smutty dusty Content, the only way To brighten is To peel it on a weak solution H_2SO_4 then dissolves it

I put some H_2SO_4 in the Solution Then the Cu dissolves leaving dusty surface Then as a result the smut is dissolved by the free acid

Dilute HCl with plenty H_2O_2 also dissolves the Cu leaving Ni bright.
Later = Et 2 als the Nickel NG

20 KCy 5% 80 H_2O_2 1%

1st 2 min Cu 1/2 amp –
Then on new good Solution cCond precip –

15 grams KCy to 100 cc Water

Made Solution 50 cc of KCy Solution + 50 cc of Diluted 3% H_2O_2

a 2 min Copper on Pumpkin went off in 5 minutes –

2nd one. 50 min + not gone yet

NG

Aug 2nd 1912

We took a cracked celluloid record grafted it & brot it over & started plating at 10 amp, it took 2½ hours to coat over & then there was 1/4 inch in center not coated of course this spoilt it for my new idea of brushing with Copper & then putting Nickel on ½ of record & then immersing with Cu & finally dissolving off the flash of Copper with $KCy + H_2O_2$ = but I put it in the German plating solution of Nickel & plated it with 10 amperes for one hours = Not Cracked — Grimes took it over to run 3 days to make a mould it will of course be no good but it shows can plate Ni on Cop ½ / 1 and celluloid Perfect ½ /

15% KCy

complete painted Cathode of nickel 2.75 sq inch

10 cc KCy 15% 50 water
10 cc 3% H_2O_2 50 water —

2 mm ½ amp Cu in 9 50
dissolved in 9 minutes — 1st one 9½'

2nd on 10 2½ = off one 10 16 — 13½

3rd one in 11.09 — off 11 38 — 29 mm

1st one dissolved in 9 mm
2nd " 13½ "
3rd " 29 "

This seems to be a very good Solution for this purpose — + Cheap Does not attack Nickel the slightest —

It will require for 10" disc of same thickness of Copper as on 3 painted Cathodes. 1000 cc of 15% KCy + 1000 cc of 3% H_2O_2 =

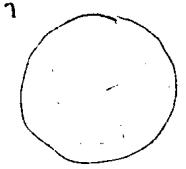
Gold plated Black. Record from a work[illegible] month

rotation Crack = SB Cap Selection

ng 9 guess —

Wrecked by Moores wrong

3:1 amp 10 minutes.

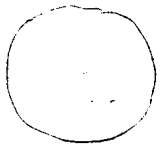


here a little blurred

blackmark specks

specks

5 minutes more blurred over Gold



Thin Core see gold

Clear

5 mm more, all over Gold thin

5" dia + specks

5 minutes More Center good

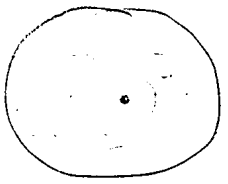
+ all over Gold Circles 5@6

dia not good specks - one

large plaque ... actual

size - bright — Total 25 min

It shows effect of rotation



around here
streaks —

Evidently dirty here, or bad places where water got under gold & stripped it off — Next one use with slow Motor down, The Speed of rotation is now 40 Rev min —

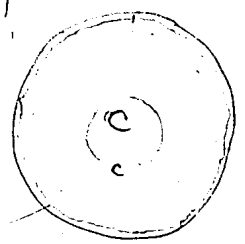
25 Mm at 3.1 amperes on 100 inches sqr

We Wash & Transfer to the German Nickel Bath 40 Rev 10 amperes for one hour started 10.51 — 9.9 amp - after 30 minutes looked at it — Not peeled but there are hundreds of black specs as if the original gold had been stripped off & there will be holes

started up again at 1123
for 30 minutes more =

1 Hour 10 amps

When taken from bath
found that outer half of the
dehala had peeled off but
record part intact,



C Center split
Equally around
sharp Edge of
label when I
pulled sheet off
1/3 is still with
sheet at C

Split 1/2 way round
at sharp Edge near Edge of record
about 3/16 in from the outer Edge

Had I not Taken it out after 30 minutes
it would have Grown O.K - Where
it peeled Nickel Solution got
under & plated underneath giving
an appearance that the Copper
had been dissolved — Only 1/3 of
The underneath shows Copper

The balance having been checked with Micrometer

The sheet at either edge Callipers 2/1000 1/2 inch on one record 1.8/1000 — showing that 30 minutes at 10 amperes is more than sufficient These measurements of thickness is uncertain as cannot know how thick the Copper is —

Under Microscope where Copper is on side facing the record the waves + grooves look good — By doubling off the Copper I can get the Callipers of Micrometer inside the record grooves —

This peeling shows that sharp Edges to Grip — They should be rounded —

Also there are numerous holes through the peeled sheet, even right out near edge

where to 2/1000 thick - these
black spots were noted when
we blushed with Copper —
on inner edge near label edge
there are several dozen of these
holes, also large places

We now take another gold coated record from Couch working mould — & use Graines Nickel plating Sol instead of Bath's Copper Sol

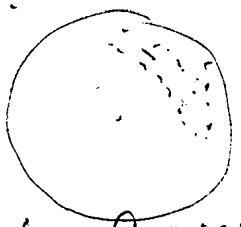
3 amp 10 minutes didn't cover perfectly — inner part just browned put on 6 amperes for 5 minutes more — Covered but inner part reddish showing very thin Coat — or poor conducting gold — Numerous holes & several black spots duplicated over whole of the record. very black as if no gold ever got there —
These spots will bridge over in plating gets thicker & leaves a bad Quality in the record —

The backs action of this mould is very much better than the first black one but they both show inner part bad —

We will plate nickel from Sherman & Reilly for 30 minutes at 10 amperes —

OK only a small split 1/4" long at the edge where they put the ring which is 1/8 inward from the edge of the wafer = The ring is a special thing never used except for testing for our wafer mould - + not necessary as has an extremely sharp edge + will not be used in production

I notice a lot of peculiar constellation of spots on outer Edge when we look it out.



We now put it in Copper with 15 amp for 1 hours to prevent Curling as we propose

stripping the sheet from the Master to blister it + the sheet to ascertain the cause of the defect. —

Also to dissolve the Copper off + note appearance of the Nickel record surface — get at the thickness of the Copper electrically on the record —

Its unfortunate that Grunow never got Record from Bruce Moved — Have brought to plate 2 Submasters that we know are quite good — + We will carry them thru to working Moulds —

Mould out at 215° — Can see the record waves — The inner part

Loose around here you can feel it, Copper was not thick Enough to hold the nickel

We coated it in hydrant water
Then distilled water + dried
it — its looks good — Coat
the 1/2" of the inner part of second
next to label looks different
just as the first Coat of Copper
looked red — also sharp outline
where it changes appearance —

Evidently gold dont plate as
well internally as on outer Edges
or is due to long distance
from the Edges

We could have 2 long strips
+ 2 short ones + disconnect
after switch the long ones after
6 hours + put the 2 shorts
ones on 2 hours to plate gold
thicker on middle =

u

We cut it around Edges
+ took it off it laid flat,
Its full of holes, one hole

had allowed considerable solution to occur through + spread over a round space + crystalized. This gave the appearance of a crumpled record as if gold had crumpled on cooling it at developed + the metal underneath was OK — It was crystals of Devastation + these crystals were on the record that print was taken from these crystals were hard Enough to impress the black backmaterial practically solution sprayed on mould

There are holes all through the metal sheet some of them .003 to .004 dia — solution around holes were found on face — gas had formed bubbles —

Altogether the black backmaterial are not promising I

am now going to use White Mountain at 120 Fahr about grafted in non flow mould in vacuum to make reservoir — an Experiment of hand pressing shows that it can be done under present conditions where it failed 2 yrs ago under improper conditions —

Aug 3 1912

Experiments to mix something with White Wax that will toughen it so we can make substitutes for dies by pressing with a little heat Tried adding the ammonph Sulphate 40 or 50 per cent by Gadodium mixing a little with White wax pouring sample then mixing more & pouring sample out as on

Benzoylazotide

This is a powerful softener only a little is required for pure Salt melts to brown product Exceedingly Tough stuff - not sticky — 2 & 3rd doses no used too much —

Azobenzoide -
Very little will soften + can soften up to any amount until get too much in the gris — The wax is still brittle but tough (10) breaks readily (cut Cuts) deadly tough chips — dries at room temperature — pure stuff melts to glass

Azobenzoidin, can soften to any extent don't want much — with a certain amount it feels dry (and lumpy) taken fine impression of Ruerlon a Crown shiny - yet you can bend it right through with smaller amount brittle but cut a little tougher than White wax the good — None Left

Furferin
Little wall answer — brittle but cuts like
hard — dry — its almost transparent
Think it Tannic in acid — dull
from dish — pure stuff melts to glass

Oleate Mannityl —
Very little required, good surface
tough — grease spread dark — how to
5 grms & impress fair brittle when hot
on hot cuts tough impress good —
pure stuff melts tough viscous dull,

Ceresin added to req solvent wax
will also toughen & take good
impress shiny —

Fred Otts No 1 2 & 3

No 3 under 600 lbs felted fairly well - at little pulled off on taking Mould off - wax - at spots on outer Edge — some places not well felled —

No 1 did not fill at all on high places and waves went in Matching block -

Experiments on way to Take Submarine impressions —

Aug 4th 1912 All at ordinary temperature 80@85

100 Reg white Beeswax
5 grms White Ceresin -
Screw press — Too dry about fill -

95 Reg white
10 Ceresin
Dont fill - dry

90 Reg white
15 Ceresin Dont fill but Gelles

85 Reg wax —
20 Ceresin
filled good -

80 White
25 Cream
filled OK –

75 White
30 Cream
filled
all above grafted surfaces

65 White
40 Cream –
perfect free no grafts
apparently no sticking

55 White
50 Cream
less pressure filled
apparently no stick –

40 White
65 Cream
Very much less pressure
Dont seem full apparently no stick

25 White
80 Cerasus

Very light pressure
~~1/2~~ 1/2 feed

~~25 to~~ Same turned off & heavy pressure grew no graft
Want to see if stick

I think any where from

65 White
40 Cerasus

to 1/2 + 1/2 will do with or without graft with moderate grass

If temperature goes to 70 can use 1/2 + 1/2 of last 65 White
40 Cerasus

A Retrial with no graphite show she fills with new pressure at 90 cobalt + 15 Caesium —

Y will work ok without sticking at 55 cobalt + 50 Caesium —

& Temp of Room is — 82 —

Dadd will make 9 runs
2 of 90+15 75+30 + 55+50
for trial in press to impress record from mould

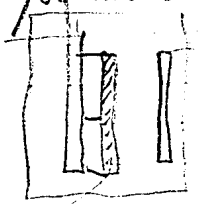
OVER

To test pressures of our screw as compared with our little hydraulic we use for pressing babbit pockets & made 2 pieces lead 1/2" sqr & pressed with screw with same pressure as we pressed babbit with & found lead went from .192/000 down to .068!

To do the same thing in hydraulic required 85 tons

So far we have been unable to print one perfect altho we have run flowing round - in lifting off the bridge comes clear & 2nd bracket is sticking down in bridge well & bridge well pulling off. Had one that was perfect except about 1/2 sqr inch at point. Mostly along outer Edge of sheet —

Green plates, nickel on Copper Anodes
with 70a ma density per one square
inch



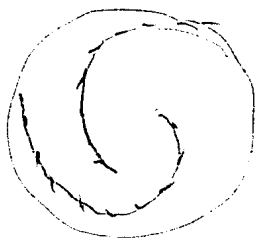
Vertical

disc

He dont rotate.

Thus is fatal - only means death,

For plating over Copper on a
Graded machine uses 3 amp
density + this covers in 10
to 15 minutes - then he raises
to 10 amp + finishes 15 @ 18 —
to Complete —



Black submarine Platina cover. Never had it on 4 hours — it appeared fairly Covered in 40 minutes —

It looked nice — but you could see by shine that platina had Covered over a smutted section not reflecting as well causing to Matte surface —

Put it in Copper bath (Big bath)

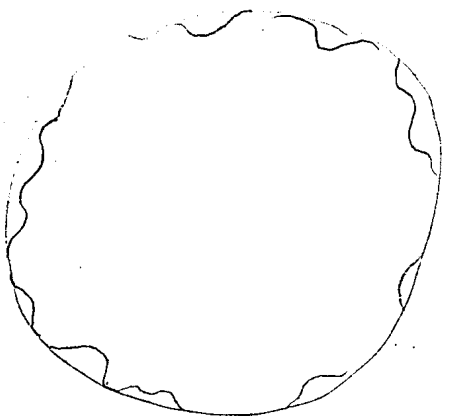
1/2	amp	8 min
1	"	14 "
1 1/2	"	17 "
2 1/2	"	5 "
4 1/2		15 " When Copper got to Edge of label = no reason more it covered + coz let it go on

When Cu was on 1/8 inch deposit we started to increase amps the current was opened over 1½ to 2 minutes & during this time we accidently got on Iron for a second or 2 40 amps when we looked at it again the Copper had advanced 5/8 deposit & was of a entirely different Color instead of light yellow it was dark red + the scalloped joint between the two deposits was very marked.

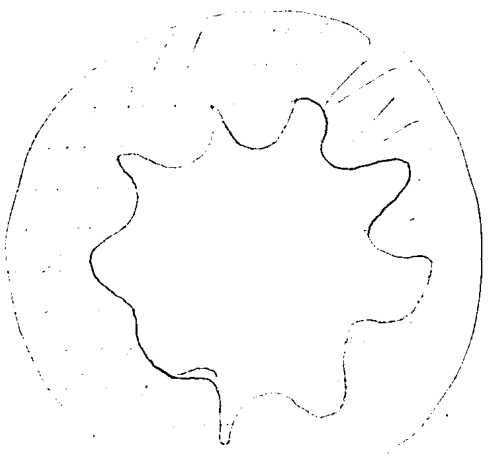
It took ½ amp 5 minutes before it got up to top of Edges + then it was in Spade or round nose rotated double finally on 7 minutes deposit the deposit reached 1st tracking line

This shows very poor arrangement for Contact. The wire has kinks in it does not lie flat + the platinum has high resistance

Think grooves put in & covered before going — Gold Face bent,



appearance just coming over edge



appearance taken 1/2 Coated

There is very poor plating has too high resistance -

We now go back to (Jack) & will try Silver -

Order for Woods Tennis-Rubber (Green) & 3 or 4 Steps Dented Rubber Mats to replace Cloths -

128 grams 1 inch -

1000/1000 - 125 | 1000 (7

450 | 3,5000 - (77

31 50

3 5 0 0

77 - Mul

128 - (1000

4/1000 1 grm

1"

1" 7

35 | 4500 (128

31 0

1 0 0 0

7 3 0 0

3

7 - 21 | 1000

1/4

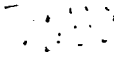
Notebook Series -- Notebooks by Edison
Notebook, N-12-07-29

This notebook was used during the period July-August 1912 and also in December 1912. All entries are by Edison. The entries from the summer of 1912 pertain primarily to the transfer and pressing processes involved in disc record manufacture. They describe experiments with various methods of preparing Condensite varnish surfaces and culminate in a list of eight steps in the process of pressing disc records. Edison's notes indicate that Edward L. Aiken, Jonas W. Aylsworth, H. Grimes, Sherwood T. (Sam) Moore, and Frederick P. Ott assisted him in some instances. There is one reference to notes entered into "Book B," probably N-12-07-28. Also included is a series of entries on "instrument tests" that describe the sound quality and volume of recordings made with individual string and wind instruments. Entries from December relate to the electroplating involved in disc record manufacture and include experiments on plating molds with electrolytic deposits of nickel, gold, and copper, as well as notes on the structure of the plating tank. There is also a comment on Edison's work habits. Inserted into the book are three related notes by Edison, including one from January 14, 1913, addressed to Ott. The front cover is labeled "A." The pages are unnumbered. Approximately 65 pages have been used.

July 29 1912

Experiments on getting quiet surfaces —

No 86 Transfer good no flaws — but the surface is full lumps — Millions of lumps need it feels them

 Thick as this —

Evidently transfers must be smooth. no use having transfers like this for they will pop up in the record —

This record has very little surface when we first put it on it showed wear, but this was a white scuff which was shaved off by the diamond apparently it showed on the master, or the copying it must be considerable but after blackening with vaseline it was better = Used Pond's Zephyr No Knox Thick cream and so on Waved (Later — it is)

fills OK – Looked streaky before
washing has this

There is increased
pressed emulsion Pentax Zoom but
focus pins and corners are blurred
Cluff – Scratch is pretty faint
Except at start but entirely lost
Punch Clean print 1015 moved

Pretty fair stuff –

Aiken Number –

87 Acts like 90 but no white stuff Comes off No Cracks. Primer buffed the master (no rouge) but run out scratch to still fill it Zephyr. Notice 2 or 3 light red spots – This stuff worked good – the roughness is in the Master mould

This number is a great improvement over No 90 + 86 – No Snaps, Columbian Scratch appears to be made up of fine cracks

Transfer 1 good
One, has faint cracks at Edge +
3 bad spots 1015 Zephyr

Aiken 88

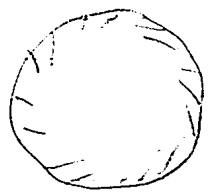
No cracks, run out compression other side scratch less than in 87+90 or 86 Run out much louder Big hole in transfer didn't clean up paint pulled off - on mould

No white cuff — Yts clean The Roughness in the mould

| Rough | not rough

The square clean place in Zephyr about in all records —

Transfer has cracks at edge 1/2" long



89 Aiken

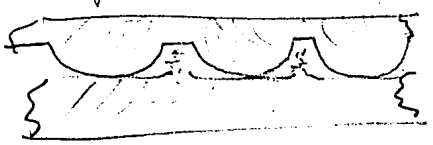
Dust comes out + runs over outer part of record, it looks black — Cracks in center Edge Big holes where sleeve has stuck to mould Cracklers on start strong

The Transfer Very bad, Cracks at Edge + running one inch + place showing light color stuck to mould | Thes Numbers in 89 — Buffed mould Zephyr 10 15 9

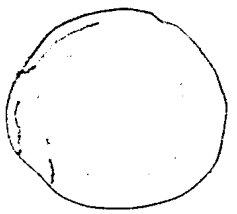
Transfer Cracked from Edges bad + big spots one big chunk Came off

Aiken 90 -

This is worse than 86 - Surface nearly Everywhere coated with whitish yellow - it comes out of the transfer. It is on the side walls - When diamond goes over it shaves it off in long shavings — it squeezes out of the transfer + runs upon into the bridges



This record is all cracked at Edges



No snaps -

It also sticks to mould in bridges + bag dust comes off = This Number has perceptibly of sticking to mould + Cracking as well + also letting Liquid Separate out

Transfer I very good another full flowing Cracks at Edge

Aeken 91 Ks very good [I hear no harmonics or anything I don't] Surface is good — It has Pentin discoloration — it must be very soft, Its No 1 Yellow Vermouth with 20% of Pentin To 100 Resin - Req pencil — No Naphthalen however — Had few small bubbles after baking Has come around a portion on 9Z but not raised up - they don't seem

92 Acken

Not so good surface as 91
has heaved up around edges all
over record = Moore packed them
says soft jelly like =

5% less Penta (10) 15% not
counted quite as much as 91

93 Acken

Has very good surface & cut hear run out = imagine I don't hear harmonics — It's not smoothed as much as 91+92 This is pretty good If all records were as good as this I would pass them for surface

10th/s Penta — Scarcely any of the little round spots in this —

Made a Dup & it was bad — This shows our transfers, baking + pressing is where the trouble is — Even if we get a perfect record the next one may be very bad —

94 Aiken —

Little more cracks surface on this at start & all thru its only fair

5% Penta — Lots little round spots - some are in record groove & these Cracks, shows long cracks nearly closed up but not quite, Evidently transfer was cracked was not fully closed up on pressing record dirt oged out of Cracks at middle & shows in a spot

Record appears dirty —

In inner smooth part there are several very bad cracks -

95 Aeken

Smutted – Dont look good

Torn at Edges – Weaken big

Cracklé run out – near center

very quiet

30% Penton – Very large Cells

round spots very conspicuous

+ numerous – Hyphae at Edge

+ Tape generally none —

Thes shows our present plates

weaken bad flora culturally

of the offending ingredients —

86 Best
87 Not so good
88 Corner
89 Out comes out from Cracks
big run out — Not good

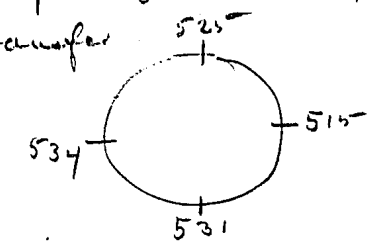
90 Surface Coated nearly all over with stiff Gum and shows off to Color Lines

Transfer

86 Transfer best
87 1 quad 1 Gap
88 Transfer Cracked all around Edges radially
89 " " 4 big Gap spots
90 1 good 1 very Good

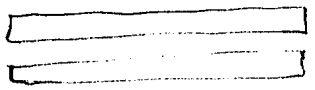
Caliper of 1200 lb pressed

Transfer



Thickness

Grimes double blank

1st 

Raw powder blank pressure 500 Lbs
100 lbs steam heat -

2nd These are baked 3 hours at 220
@ 290

3rd Two put together no varnish between
pressed 500 Lbs with heat of steam at
100 Lbs - It flows out against Taper
ring

4th. Varnish face one side only with
2 Coats varnish -

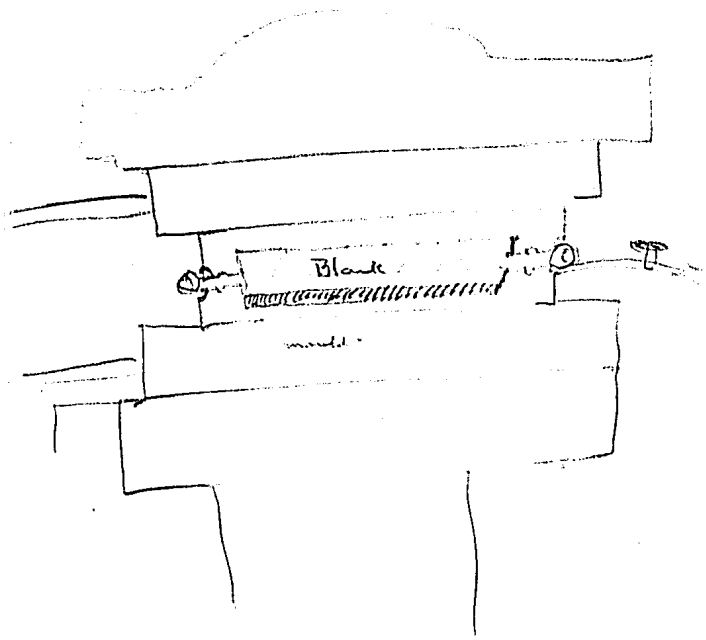
5th Bake 4 at 140 Fahr 2 To 4 hours

6th Reprees varnished side against
smooth Monel at 1500 Lbs

7th – Varnish again with one coat + bake again at 140 °F for 2 hours

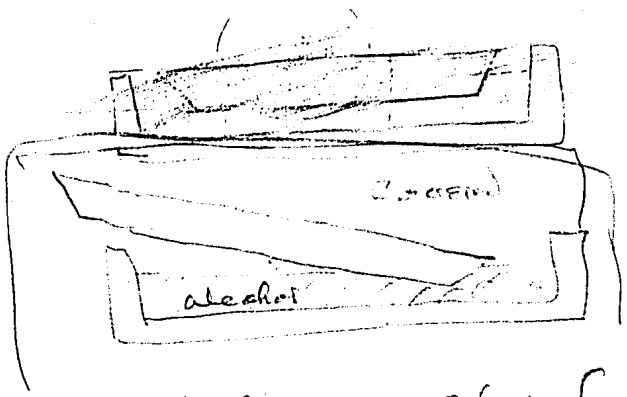
8th = Put in press + print transfer on at 1200 lbs with 100 lbs steam heat, 3'

Thus ends the Operations of making Grimes plates with 12 Coat Transfer



Moore suggests put cold coolers in Top plate & ~~Coat~~ reel on coolers & Solve Terne Coat coils steam from bottom plate heat use to coolers instead of sea & Chilling The Condensate at the Mixed

Others put 1/2 of a Record in alcohol



2 months in — alcohol
acc Engr —
found that the top half
of record had very numerous
blisters fully as wide as track
hundreds came in track & took
on of the 10 kc sound records
on Reproducers over big
dull Cracked after very short

Some Thus

Moore suggests weekend pot
transfer in earth Tree and—
perhaps grocerie Can do it
other Chicken Can finish
at 1200 with Vac —

Arkem 100 - 21 - Little more scratch than Reg = Using tracked Record —

100 22 shade more than reg

100 74 - Shade more quiet than Reg

83 - slightly better than Reg

79 = Better than Reg — Reg only Reason being to 50

36 - better for contours scratch + has less snaps than Reg

92 Smoother + less snaps than Reg — = alph Mapp

97 Very much better than Reg + lowest Contrast + Fewer snaps all 3 better is not moved — of Course the Wood shelf has a run out

37- only Moved swaps
smoother than Req

Para Nitro Chloro Chloro
4/10 6/4 6 grms

4/4 Louder Coulommier than
Req

99 Aiken beat = Dehy Resin 100
Phenol 15
6/4 9 8/10

Alcohol 120 - DE -

122 grms of above added to
this Dichloroacetal 6 grms
6/4 4/10 grams -

Grimes put brass ring around blank so blank could not flow = used a new tracked blank — Also I varnished

This is the nicest clearcut Record we ever had — perfect & good around Edges. No burnt (No I don't give credit). The surface was good but there was lots of snaps

These snaps are due to fine holes & when he relieves pressure in press & takes record out a lot of wreck comes up thru these holes & over flows on the record, this makes the snaps —

The no flow idea is good & we will adopt it —

Notice on one record or regular
phonos that something comes
over edge + gives a big grunt,
Grimes says there are openings
in the sides + when he dips
the mould in Patch-a-Cake
it runs in — If this is true
that this grunt is patch
it should when water is put
on it + rubbed with a rag
close big Cavities from attack
the Conkerade — I tried it)
It does leave great deep
Cavities, Grimes is right + we
must use rag + not get RID on
Edges

I took a scrap Parkwood record
No 1 Varnish put RCH on it
all over, then put water
on + rubbed with a rag
+ finally was well with
water + dried at 120 in
oven for 1/2 hour —
I then had a used record
pressed on it, all the holes
closed up O hole @ closed
all except a thin line some more
crescent shaped line — There was
No improvement in surface

Note for Aiken

If the coat of varnish used to stick transfer on is not hardened + much segregates out when transfer is pressed + then over flows round through holes

Why not use Varnish with no muck in just plain resin as colophan -

If it is not segregated much that comes up then these holes but the unhardened varnish itself - Then in that case why not hold it in press at 100 Lbs heat until it is hardened so Cant flow out —

How long will it take, to harden at 100 lbs steam heat so it cant flow ? ? ? =

If too long in press must transfer surface then the sticking varnish Could be given a double dose or more of 6/4 so it would harden within the regular time 1 or 2 min —

5 5
1 1

Comet Records

Moore said when he made ~~[illegible]~~
he noticed that when he felt outside ring
it appeared to be cold but when he
took out the record the center of Record
was so hot he couldnt hold his
hand on it — This of course
will never produce a record or
a train for that wont be checked

Submasters taken out of press
feel cold in a minute while laying
down they get hot - because
they have not been cooled
all through —

Beat -

Dcaps of 93 with Variation only of MCN 15% Normal

Aeken 96 = fine transfer

no cracks no fine pimples — Extra good —

Dup of 93 beat with 25 MCN in

Aeken 97 - 20% MCN

Looks fine - Even fewer than 96 — in one place a slight separation underneath [illegible] about of fog

---

Aeken 98 MCN - 10% BEST

see very small pimples no amnt breaks even better than 97 No fog

---

5%

Aeken 99 = shade fog

not perceived beta 98 97 Eke

more cracks or flaws — no Eke white

Aeken 100 - Cracked - badly.

fogged little

not good

Retrial of 4 Varmuhs
of Jwa trial looked good - put
but grams plates

NO 101 = 2245 - slightly more free phenol
than in Req NO 1 No Cracks
- fog spots small, slightly few
very slight small pimples

102 arker - 6 grms Benta
to Req NO 1

103 — Monomelromap 3 grms
all Cracked Edges

104 arker 3 grms penta added
full pimples - smut spots, few small
Cracks -

99 aiken Varnish 1011 Record

Even all over no rust or cut, surface very small + OR with horn 3 ft away no flaws no dents —
12 Coat transfer = didn't leave ring but there was very small speck —

97 = Cracked, but is not the Varnish

The blank itself is cracked all way thru. bad surface with small smooth part,
The Scratch is very small probably deeper than 99 - but not much, in weak part with horn Edge 3" from drill Count hear it

96 = bad Crackles on start
Scratchy all the way thru
probably due to flow —

98 = generally more scratchy than
97 + 99 =
Think the scratch is proportionate to
the flow — Thus simply flowed more
than 99 + 97 = had flow been
practically nothing all would
probably be good —
M98 there is a hole + stuff
has come up + flowed along
the grooves —

Old Santa - Invoked mould healed
225 Fahr + grafted little tit came
up slow — Second bright but one
apparently flat could see that they
were raised The remainder
Quantities all over + scratchy
had run outs of Every Kind
+ M9 Evidently heat + pull
T 12 coat Granafer

Sent in 2 pieces.

New Varnish heated 2.24
grafted — stand OR/smooth
all through but [illegible]
to the bend — Then heating
process with grafting needle
not do must get rid of flaw
altogether & confine the flow to
replacing the record in only

Aug 3rd 1912

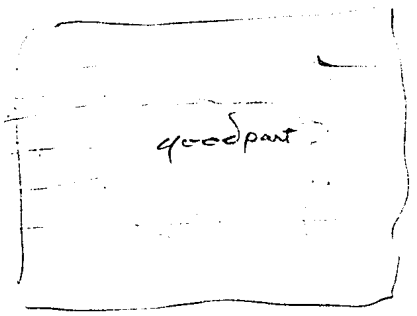
Grimes made a working mould
1011 - from a Transfer with No 1 Varnish
& a print from that —

It is a satisfactory scratch only
shade more than Sub master
print —

Evidently No 1 Varnish
stands the vacuum - & must
be established for Permanent Varnish
Record ~~Wood~~ looks clean-polished —
When said plating is got
proper think it will
be OK —

Experiments Fred did with 2" square white wax graphited by Hatton press against a heated die pressure at 160 deg and

Dentifrice at 140 Fahr ½
" 160 " ¾



Fred is making a ring that will turn the white heated etc to it put it in hot + pressing — then Cooling

Several discs calipered
Each time a disc is
pressed to a ring it
shrinks 10/1000 on 10"
record

Platens used on 3 Records
.012 dia - aflammable
Calipered .011 - .46 inches used

90/1000 agr for 3 Records

Tried ~~CCC~~ Effects on phonograph

Record in ~~police~~ work

are in Book ~~No~~ B

Reeds of different instruments in Orchestra by hearing thru Microscope

Among Lower 2 French Horn

The tone is very impure, there is a slight bremsh in it at one places. ~~of~~ the Extra overtones, The pitch varies very bad on sustained notes.

This is a very poor instrument for pure tone.

Cantor

Later I tried Rhino Horn but had pitch altho it has a big head fly wheel. I would get this tuned before I go ahead.

Quartet Test

~~1st Violin Reader~~

Viola — 5 inch away

[illegible] acceptable here —
overtones will be nearly all
harder [illegible]

[illegible] Can it be that the
player is not steady on low +
can't make a steady Volume
at Second O/K on Tune but
Test on scale's & Notes
[illegible] on scale not shown in tunes
Essentially the Tune Covers a
Lots of defects —
Thermando holds trembles when
bowing + it trembles different
as bow takes different position

French Horn

Anne Lawrence Poole

I hear French Horn = The sound and notes are not perfectly even in volume but better than Viola — Its not particular sweet instrument it's timbre changes from note to note

Horn 12 Etudes —
Last note rather — timbre allowance overmetal scale, Uneven
Enormous unequality in volume of sound in each note, a sort of
Tremolo not even in number, it
might be called an unequal
tremolo — Very unpure —
+ queer hollow tone Accompany
by

7 9

Clarinet in B♭.

15" away from horn

Rather steady – last 7 notes poor – + melodious clarion + weak, Enormous change of volume & timbre at 11th note – good timbre steady at 7th note, seems to be good up to highest, after 7th – There is a once unbroken upside OK in Tune where one cannot detect,

Cornet in B♭

4 ft away

Scale is rank – on every note there are great volume changes
The timbre changes on every note,
only one pure note in the whole
scale, The first two notes are
wavy – this is true of the Clarinet
& Violin first tested, its a little
exaggerated by chopping reproduction
just before 1st note comes the Extra
records seem to have a wave in
relation of Reproducer —
The unequality of the sustained
notes come serially as notes &
with the tone. It is a very poor
instrument when heard in Scale
Crude & raw —

1st Regular Violin -

5" away from Horn

Somewhat irregular in volume
but better than Viola high notes
pretty good except last more
noise than music —

Trombone

4 ft away

2 changes in timbre
& a stumble at one place
Power on volume Mean
- Brass Horn Mean
better than Cornet.
Its more even in Volume than
Even the Violin - The 3
lowest note not much - forty -
blubbery — Very even on the
tune — Not bad instrument

Cellos –

Key of G

Tune even above one octave

Volume of instrument notes

Attack Cellos

Scale –

Labels must have been changed this don't sound like a Cello –

Very unique Volume

Flute —

15" away

Somewhat irregular in Volume

In These Notes Enormous Changes of Volume from one note to another

If the regular volume is represented by 100 the very next 2 or 3 notes it could drop to 25 in Volume then back to 100 + so on — This is a Rather peculiar Flute & it ought to be fixed

Tuba

(Offenbach)

Better timbre than Trombone
more overtone & fuller
power in Volume

There is a blubber in one
note very noticeable in
Db or C#

Piccolo

15" away

Scale. Low much better than flute on high —

In the Tone notice that violent volume change took place like the flute but this change that shown in Scale — The change is so great that it would fade from a clear sound to no sound at all + then go a little higher + appear again showing there are in flute a certain part of frequencies which produce a Volume 2 or 3 times less than it ought to Go in the scale there is found a region

Oboe

Has great timbre

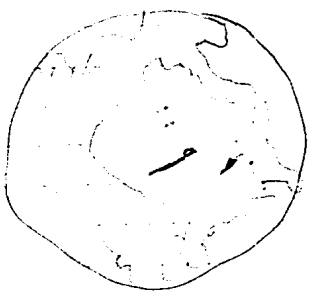
Even volume scale of all so far heard

at one place the timbre changes & volume greatly increases & is much softer than flute, more like a Clarinet in timbre ~~timbre~~ perhaps I've mistaken what this instrument is don't seem to be the kind of instrument to play flute & squeak on crafted.

No 1 Various.
Experiments in which
only MCN was varied

No 1 15 MCN Reg

No 2 30 MCN —



Worst of all has seen
yellow

Smutted bad

No 9

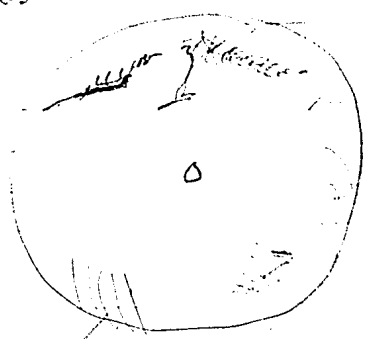
potted all over deep, showing legumes
run out + underground decay + stewed plants
+ transfer — This shows MCN not wanted

2A 20 mcn—

5— 10 mcn

yellow

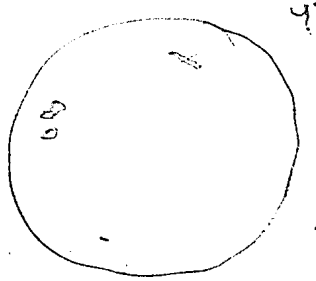
Very shiny surface



Cracks

Cracks no—

6 5 MCN — yellow



otherwise good
heavy on dull
surface on MCN

No 1 Varnish all way from Sticking Varnish
125 B — Rough & Lank varnished with it —

This was the best only one line near center where its raised & shows yellow streak — Unlike all the others it dried shine but was dull, perhaps transfer plate was dull — WE pressed & tracked New Mould on 1st use of the mould, it has big Crackles on entire smooth part & 1/4 inch on Music — But we had previously Examined the mould & found these Crackles are on the Mould, Canary bird wings — all the Crackles are finely cracked

for us the mould had not been perfect the record would have been very good surface — the shade lockdon continuous crack have heard hear it OK with hand on ear with faint crackle hear nothing with hand off ear after get us 1/4 inch from start of track — there sent a snap unit of this can be duplicated into the Best transfer for us [redacted] — Looks very clean + outside smooth part looks also extremely clean

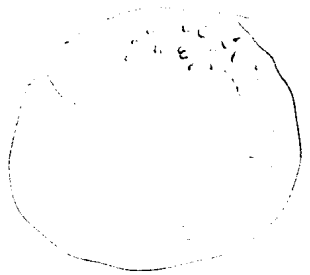
The Canada bond coupons are due to go on playing either first coupon of gold but more probable in the Mckelvie

There are several mountains or long range up [redacted] —

0 No 125 – B Blanks – is cementing Varnish related to No 1 Varnish

12 Coat Transfer
No 1 Varnish –

Very Good Cracklers – Cracks +
Hills – Expectancy Good Record



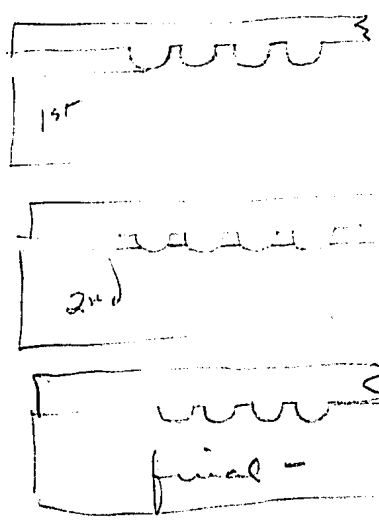
Ditto 12 Coat No 1 Varnish
125 – B Blanks –

Hills – few Cracks Cracks 4:00
sharp Cracklers hills dull soft out
Loud – No

Want Ackers Number for
the above –

Process — now — ed — 9 11 1912

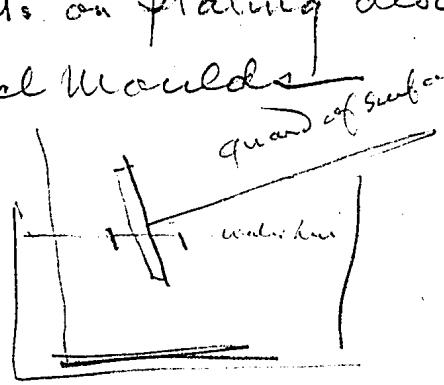
1 Put mould in
2 Leave in Vac 3 mins
3 Raise press 340 + pencils marked in
4 bring to Centre of 3 mins
5 put on 40 Lbs pressure 6 mins
6 then put on full press 1 min
7 Turn off vacuum, put contact-for 1 minute, then break Vac. Keep contact on 9 mins
8 = Take press-ure off + pull mould — pressure — pencil on grad-uating of table



Dec 31 1912

Expts on Platinoid disc

Conical Moulds

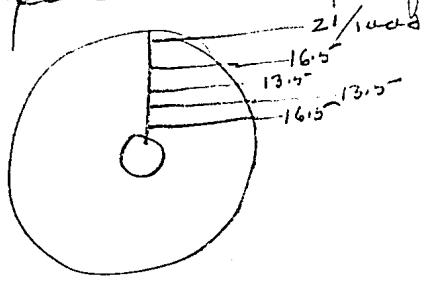


10 Rev Min —

18½ hours average

12 arrangements

Calipers of Cu



Nothing Unsatisfactory
the quarter lots of 6 Oclock
Dyes collecting & Coiling
from Cleaner Cu Coat on
& piece plated in Ni,
Must have rubber cooper
on part exposed or under
to immediately detach
these pieces — also
Must Clean Cath to
stop Ni from plating in —

Dec 31 1912

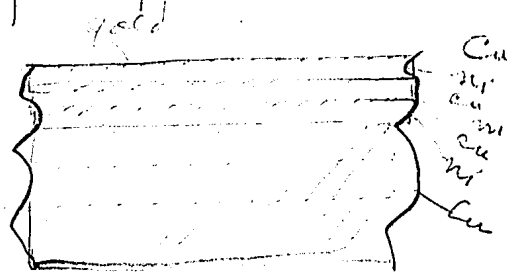
Tried the idea of 1st plating Record
(Gold) with Cu 1 min at 15 amp To
Cover Ni for 2 hours at rate
of 80 Mil amp per inch in the
Gentleman Nickel Solution,
Dont Crack or peel —

Think that can get .002 & then
possibly coat again with
Copper which is tough &
will prevent Cracking

Dec 31 1912

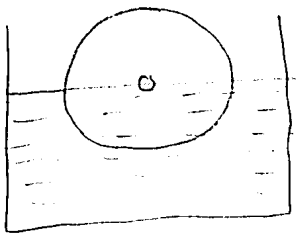
possibly make a Composite
record face of Nickel layers of
Ni & then layer Cu
up To 10 or 15/1000 then all
Cu —

Should have many records
in this way —



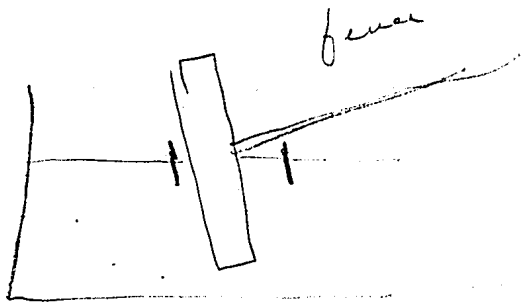
The gold & 1st layer Cu will
wear away by cleaning & then
the hard Ni will be the face
as the depth of wear is only
1/1000 the Cu is not more
than 1/100 of this it will
not effect the quality or
make it any rougher & we get
rid of the Nickeling Operation
which takes 2 hours & brings in a few Cracks

due to dust we must clean the metal before plating by the copper ball & rouge at once —



The new plating cell is a peach Containing the record 1/2 quart of Liquid 1/2 in & containing 10 Red min has many advantages all the Grease brush & dandruff on the 1/2 part Comes out of Liquid into the air — Thus reduces the air bubble trouble —

Also by putting a fence

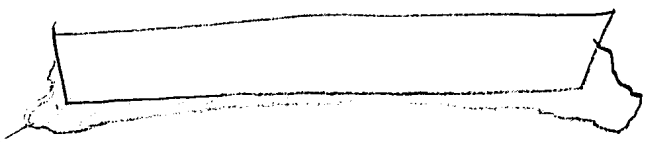


So to speak around the edge The dust head up on the surface of the whole cell is not pulled down & plastered over face of record only a very little flow on & that only as marked in the fence

By means of a copper of soft rubber on the point Exposed to the air all the dust is kept at bay & particles get no chance to stick & be plated in the Copper —

Dec 31 1912

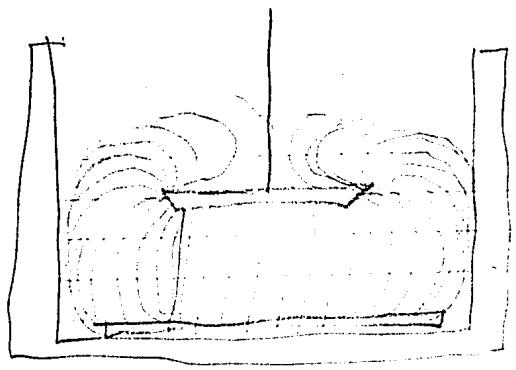
I cannot find in any of the Electrolytic plating books where they have got rid of heavy deposits on edges. We have tried a great number of devices but so far not successfully the second when it comes out the bath is thus



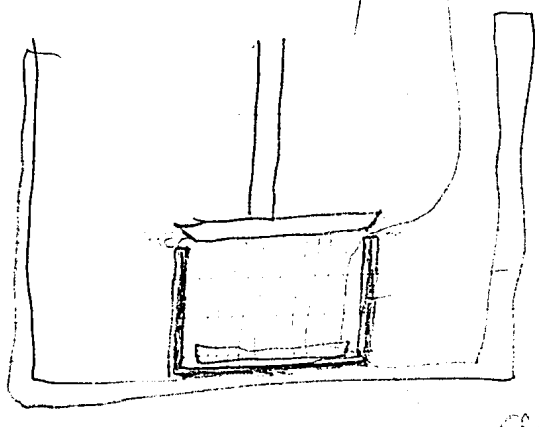
Cu

I find on thinking it over that if the heavy plating is done it could not help occurring

& I am working now to work on that principle

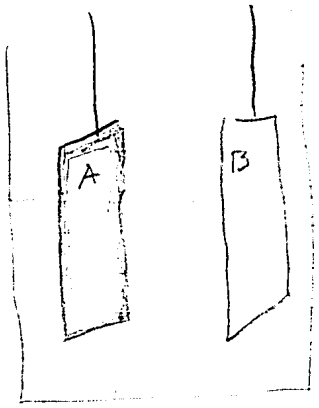


Old & usual way



This principle is used in plating I think —

Just tried the Composite adhesion



A Cathode of sheet Ni B Ni Anode
Cathode is painted around back & Edges so acc plating takes place on flat surface it will easily strip (acc) + nothing to anchor it,

First put on 400 Ma amp in Cu sol for 10 sec then covered then put in Ni bath for 2 hours at 100 Ma amps

Surface Exposed one inch — It adhered strongly showed no signs of peeling at Edge — like Cu leading it down in Contact —

Used Harrison Ni Sol'n.

Sol —

Stripped it & it Cracked pared

0

1.1/4/1000

It showed marginal pin holes wants, but would go to 2 1/2 @ 3/1000 before could see matte finish about think it would peel Even then —

Think with 1/3rd this density of Current + the same amount of time & Thick of Copper + can get 2 1/2/1000 Easy

then coated part on 1/4/1000 Cu & put 2½/1000 more Ni on & do this 3 or 4 times & finally finish with acid Copper —

the Ni is somewhat brittle

I now put 100 ma for 1 minute to coat 6 inch sq. Copper on rotated Cathode it covers it OK —

Then put in Ni Sol 100 ma about 1 @ 1¼ sq. inch

Bran on 36 min OK no peel

peeled at Edge — 40 min.

Wants more Copper

probably 2 min at 100 ma —

Put new strip in, 100 ma 2 min in Copper

Threw in Ni sol at 7.59 — at 8.45 not peeled

9 pm " "

9.30 " "

Every body works but myself, am all alone in Lab making these experiments the only man out of 4800 except the watchmen — in all the Works

Off 10 o'clock just started peeling at 10 - bottom Edge where it is twice to 3 times thicker -

put it in Copper 400 ma at 10.01 pm -

at 10.45 fine grain Cu OK not peeled —

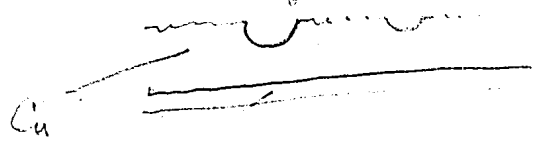
at 10.45 increased to 800 ma

this is equivalent to 60 amps on a disc - as there is about 1½" Expanded in Cu Sol.

Stopped it to OK out of Gent
like Ni Cracks showing that
it must not be too thick say
1/2 ~~mm~~/mm + then a little copper
alternation Cracks think 1/2/mm
with 1/20 or 1/40/mm Cu Electroan
Crack Copper by OK a weaker net
Crack, Lower density on Ni
may keep out th + make it less
brittle also heat of press
gradually cool it

800 ma on 1/2 inches given
gram OK must be kept free
bubbles as I saw in number

bubble density



Ni Cu

Disc could be connected
in by Lo a few

New Tank - Cu Coil - 67 Feb -

Put in Wolfila (powder) 6 Counts
Began Picked up water with
gold
Put - Copper Tank at
5 amps took reverse current to
Cover + then only covered one
minute - had gold

Put in Ni Bath - for 12m
min at 6 amps -

had Taken it out on account
started reading
Put in Cu bath at 545
15 amps -

There are a lot of whitish
looking specks on surface
saw them on 1st Copper

9 brushed gold Copper
Covered only Can't say
what these specks are
perhaps touch marked gold - 60

as to more Condemn than
Condemn. —

1000,

46.000 41.400-

5- .2 460. / 10 4600 / 100

10 amp min -

46 - 15 60 - 90 15 6 x

90

46 9 0 0

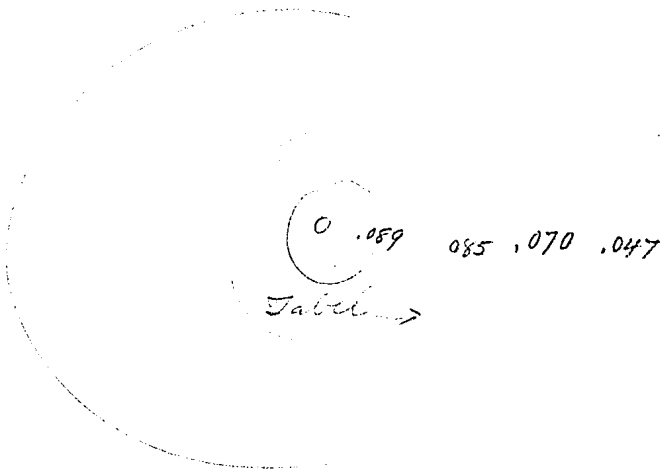
-41 4

[ITEMS(S) FOUND IN BOOK]

Fred Off - Neans 1/14/13

Graft Then Gold —
Didnt cover quad on Edges, started
Covering in Center 1st Strange —
~~Started~~ Covered over whole surface
.3 mm Except near Edges had to run it
for 20 minutes to get it over Edges
and make a clench for the Ni, while
most of Edge was ok in 7 min
has center plump in —
Transferred to Ni 6 amp
22½ min - 135 amp min. fine
no peel Transferred to Cu bath
at 9.50 pm - at 953 10
amp — at 955 15 amp for
all night,

[ITEMS(S) FOUND IN BOOK]



[ITEMS(S) FOUND IN BOOK]

a No. 706

NATIONAL PHONOGRAPH CO.

When referring to this bill Mention this Number

YOUR ORDER NO.

OUR ORDER NO.

TRAFFIC DEPT. NO.

TERMS 30 DAYS NET.

SOLD TO

SHIPPED TO

VIA:

ORANGE, N. J.,

NOTICE—Please do not Alter the Figures on the Bill. If any Errors or Differences exist, kindly return for Correction, so as to avoid Confusion of Accounts.

We do not insure delivery or safe carriage of goods. They are at your risk of breakage and transportation after shipment from our factory.

Remit direct to Orange, N. J. Office.

No Salesmen have Authority to Collect our Accounts.

AGES GROSS WEIGHT LBS.

[ITEMS(S) FOUND IN BOOK]

In Copper 7 min 6 amps —
deduct Cover with leaves & one polaroid
at 2 amps deduct these at 1.5 A

Put in Nr 9 mould as in
Nun place Nr 8 to make peak

Take out section Cap at
10.07. 15 T amps —

[ITEMS(S) FOUND IN BOOK]

6 amp-

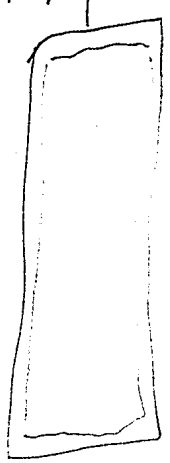
903 20 min

118 amp minutes

925 6 amp

off 947½ 22½ min

135 amp minutes



225

6

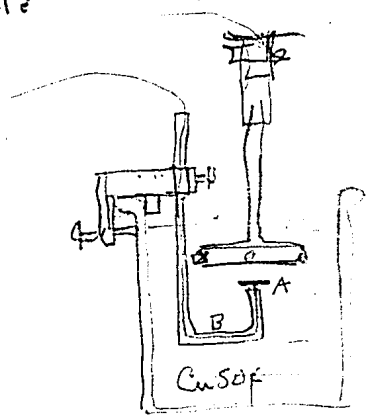
135-0

Notebook Series -- Notebooks by Edison
Notebook, N-12-08-09

This notebook was used by Edison during August 1912. The entries pertain to the electroplating, molding, and pressing processes involved in disc record manufacture. Included are notes and drawings on nineteen consecutively numbered experiments involving electrolytic deposits of copper and nickel. Also included are notes on a modified plating tank used to deposit gold and silver on intermediate "submaster" molds, as well as the details of further experiments on plating and pressing with various metal alloys and varnishes. Edison's notes indicate that H. Grimes, Sherwood T. (Sam) Moore, and Ludwig F. (Louis) Ott assisted with these experiments. The front cover is marked "Electro-Plating Experiments Aug, 1912." The pages are unnumbered. Approximately 35 pages have been used.

Aug 9 - 1912

Expts to get more even deposit of Nickel on the Copper faced Wheatstone & also to give even smooth Coat of Copper over the face



Metallic plate B used for Cathode

Crank rotated 30 Revolutions per minute
Anode Copper one inch diameter, insulated all but the inch face

1st Experiment.

Anode 1/2 inch below plate opposite center of plate B —
One amp 2 minutes, only slightly blushed. little more in Center
Middle section not so much as Edge

Aug 9 -

2nd Expt -
2 Minutes . 1 amp
Most in center, edge for ½ inch some but not increased much, Nickel seen plain except Center -

3rd Expt 2 minutes 1 amp

Yellow Color, no covered spot on middle part when viewed by reflected light Can still see nickel

4th Expt
4 Minutes 1 amp

It is not yet covered in middle part It is mostly the Center that is Covered, the outside edge dont seem to increase The anode rod is somewhat Exposed where it is clamped + I think Considerable of the Cap at Edge Comes from that

Aug 9 — 1912.

as the center covers too fast we now lower the anode to one inch below the face of the Metal disc — use tape the leaky place.

Expt 5

New plate
5 minutes 1 amp

Very good, center advanced very much more outward than in same time in previous Expts
Only Little on Edges, Middle portion partly covered — all viewed by reflected Light —

Aug 9 1912

Expt 6

We now lower the anode to 1½ inch below face of the plate –

5 minutes 1 amp –

New plate –

This shows very much better –

Expt 7

We now lower anode to 2 inches below face of metallic disc & retape the anode rod where the slip of rubber tubing

New plate

5 minutes 1 ampere

on 935- VII

This covered the coat yet the coating was lighter than previously & extended 3/4 of dia – the central part

was somewhat covered so it had Copper lustre by reflected light. Edge was covered more than 1/2 than Central part, but taken as a whole is to approximating near to what we want

Expt 8

Anode lowered to 2 1/2 inches below plate & holder wetaped to stop leakage

We use new plate (10) cleaned plate,

5 minutes 1 amp

on 852 48 Rev Crock

III This is better yet the most even We are now going to make a big jump and lower anode 4 inches below plate

Aug 9 1912

Expt 9

Anode 4 inches below plate

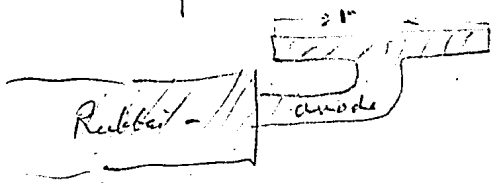
1 amp 5 minutes

9 10 on

This is practically Even all over leaves nothing to be desired, of course can see the nickel thro it by direct + scarcely at all by reflected light = to cover it so nickel could not be seen would probably take 10 To 12 minutes.

We will no try of doubling the current and 1/2 the time produced same result -

Expt 10 –
anode 4 inches below plate
Center,
2 amperes for 2½ minutes.
W anode 4" inch away
Covers even & just like same as
in Expt No 9 = 0. it is a very high
density on anode –



Think there is 2½" surface on
anode Exposed to action of liquid

Expt 11 = anode 4" away
3 amp 1 min 42 sec
Expt spoiled subsequent 1 min 20 sec
Then drop to 1½ @ 1 amp –
Covered Even —

Phenomenon Copper sticks better
harder to rub off – Velocity of ion
probably increased

Thus being the case and we will prove it as to better to plate the copper mould instead of 7/10 amp for 1 hour to plate it at 3 times the density 2·1 amp for 20 minutes

Expt 12 = anode 4" away

1/2 amp for 10 minutes to see if it adheres as well as in Expt No 11

on 941. of 951. off – dont stick so well

It is covered even but only 1/2 the amount apparently as in Expt 10 Thus shows the low density not good – powdery first part deposited gets wiped off by rotation of the liquid –

Note – on Exp't 13 the 3 amp holds for 3/4 min then current goes very down – Examined connection & also changed to 3 new cells but it does same thing = Suspect that as anode is small the density is too high & goes too much we need take it out & will try & increase area to twice what we have making 1½ dia instead of 1 inch

I noted both increased density the tendency is to increase deposit a little more at the edge – the edge & center may be due to Eye as in light plating Edge is on verge of covering entirely same way with Center, a little more copper at these points makes a vast diff in reflection of light hence it cannot be that very little perhaps all the Exp'ts of heavier deposited would have shown this

Expt 13 Note change

We now put on another cell so we can get more than 3 amp if we want them —

Anode 3 away – 1½ diameter
3 amp for 3½ minutes

to see if fully covered by direct light – we know its evenly covered but want to see amount is enough to fully cover the Nickel – Current kept OK – it was the high density that made gas noted opposite page that caused gas + Current to go down 3 amp on 1½ dia anode is the limit – it should not go above 2 amp –

In this Experiment Center & Edge fully covered – Central portion has darkish tinge to Copper showing not perfectly Covered – by reflected light it appears perfectly covered

The only way edge can be got perfect is to put a choking guard near it—

14th Expt = We have plated a 1907 Submarine with gold with 1 G gold wire 4 hours — this has a groove inside wound with several turns of fine relay wire—just we have, The plating is fine Moore is going to turn it up on the relay wire or below it not above so as not break the gold.—

We are putting the 1½ dia Copper anode 2" away from the golded submarine to allow for the Resistance of the gold film —

Using 1 amp at first for 10 minutes & then look at it, Crack about 30 Rev Mm

12 36½ HH HH

Covered all over good, even Notice a streak all way across + one or 2 spots, may be under left Cap + gave an illusion

---

Expt 15- Continued 1 amp on it 1248 on HH HH

Same streak is on it has very sharp edge + straight look as if Master NO7 had cracked there are several other bad spots or spots bare of Copper dont seem get much thicker

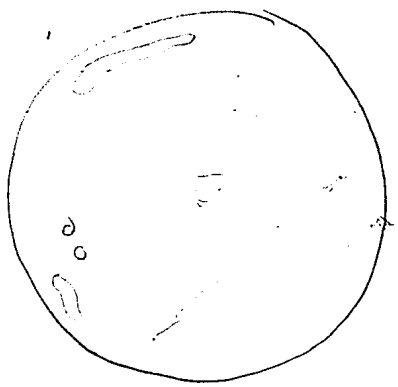
Probably an Current had to go thru the gold in this scheme it sealed it + cracked it

Expt 16 —

We now put on 2 amp

10 minutes — 101½

IIII IIII



Spots of the gold —

Let round spots which dont seem to Cover

It doesnt seem to be any more Covered — Looks just like all the surface with a in it except pulling it in it clings the gold + prevents it Coming plating —

Expt 17 -

3 amp 10 minutes

1.17. HH 1 6 min 2 ½ amp

Something caused A. anode to quiver -

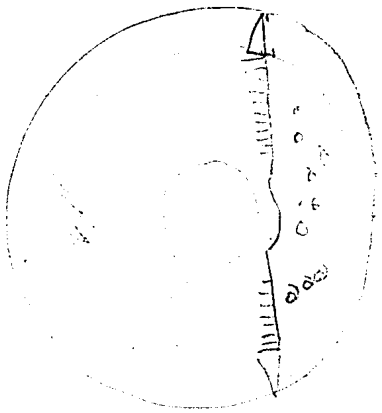
7 min 2 amp - 8 min - 2·2 amp

9 minutes 2·5 10 Min 2·7.

off —

Its getting thicker, the spots are clouding up the big crack or break is a little below

The place where label is so darkish as if the wounds of spots showed when placing to the black Mercury —



Here shaped bare gold spot Exactly duplicated at bottom.

It looks like oil on the water & when he 1st dipped it touched the gold & stuck the lines carried it forward where smooth part at center closed it,

Expt 18

2 amps for 10 min more

on 1,30½ HH HH

Covering more but not much, spots are covered as previously. The bare spots are gold & apparently are coated over with something that prevents current from reaching surface as certainly change what it is.

1,46. off 1,56 – off –

Covering more but where on the detail line is still gold & 1/8 long not covered & spots not covered

Expt 19

2 amp 10 min –

204 am –

The streak is gradually closing by creeping

It is due to oil on the surface of the Electrolyte & in dipping it got over the gold & perpendicularly inundates the gold –

We found islands of undecomposed oil floating on the solution

The oil came from the tape we used to insulate a bad place on the anode

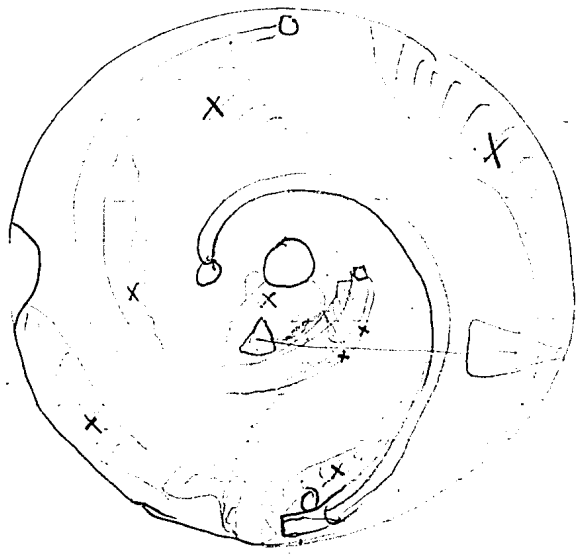
This proves that there must never be oil on the Electrolyte and every effort should be made & every precaution used to prevent it

also the rotation of the crock should not exceed 15 Rev minute until it is covered then it can be raised to 25 for 10 or 15 minutes,

We now put the record in the regular bath one hour at 5 amp for an hour — after that has regular 8 or 10 amp until we get a mould,

End of the Expt

X Move green here

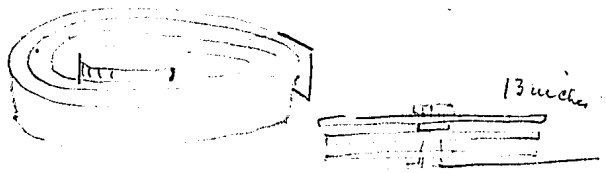


The ⊙ are heavy coated gold pads + bare tips are black.

Gold comes off glass easy—

Used 7 Cells 4 hours current on. 20 min lost Thermistor lead 85 only once did it get To 124—

Thank you for your present publication of the 1½" Electric Co. for Model dose counting Units by making it them —



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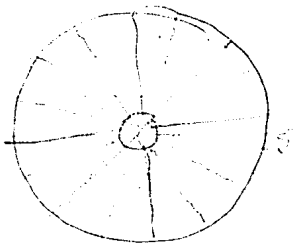
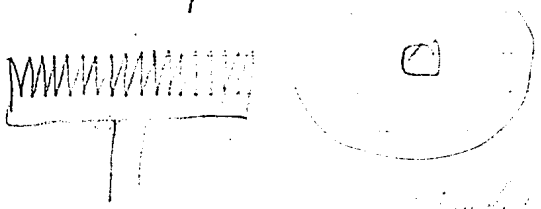
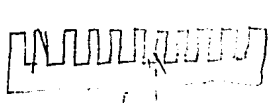
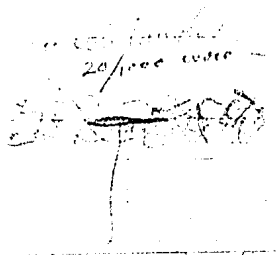


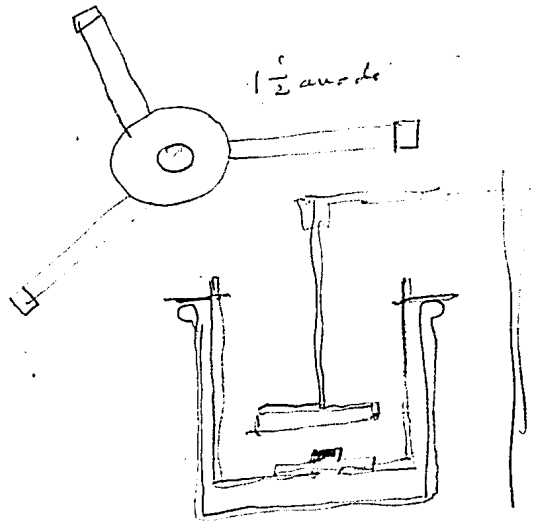






Testing our new plating rig
Nickel faced master

on 1028 — 1 amp 10 min — 2½"



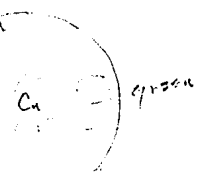
Ok - more Cu in Center as
Expected at 2½ should be
3½ @ 4 to get even -

Grimes has a Silvered Submarine with ring around to stop plating heavy on 2 edges

We could Coat it in New Reg 1 amp 20 minutes, before putting in Reg Copper (with) Crocks 22 Rev 3 Lamps across -

On 1046 - off 1106 -

Sparky -



Shows what a poor thing this silver coating is - to rig -

On at 1109 for 20 Mins at 20 amps off ~~1130~~ 1130
one min off anode got oxide on it
Went down to 1 amp -
2 min off again to clean anode
1 min off again - At 1125 Reduced to 1 amp - off 1130 -

½ covered sparkly ring
We put in Reg Crocks
3 amps -

We now put in a gilded sub marker No 7 -

1 amp 20 min - cleaning off surface of liquid &c proper to get rid of scum -

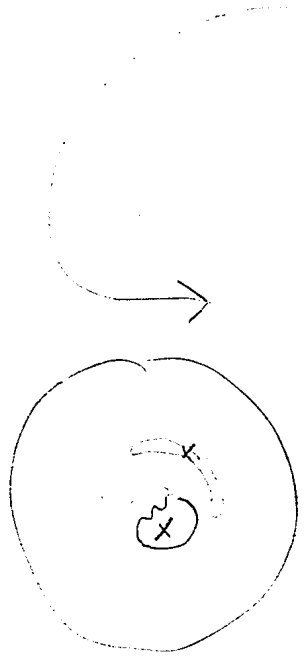
Distance from anode 2"

~~On~~ On 1143 - off 1203,

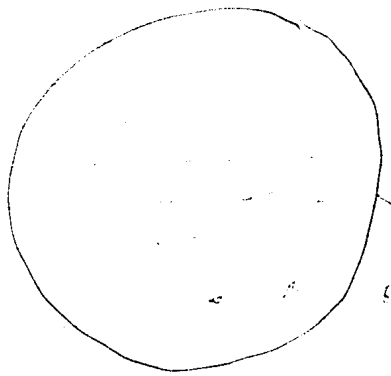
The difference between the beautiful Coated one I have other day & this with gold wire & new rig is that this had Cells of Iron & had to put 7 new ones in in exchange for the others and that was used Glacial Phosphoric Acid in Vase as I've got fine results without it we are going to clean out & use - gold on this not bright & near label is dark ring 1/4 to 3/8 wide.

On 1205 for 20 min more

See remarks next page On 1226 1 amp



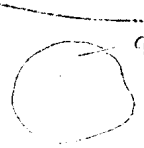
X not coated but it in Reg Lamb 3 clamp



No scalloping bright spot.

High resistance gold -

off 1247 -



gradually Comes

On 1247, off 108

2.15 nearly filled except slightly 2 gradually on 1 part of engine

3/4 (Cover) The black ring reference. Cover & gold gradually broken from use put on 1 clamp & let her go see if she will cover —

No 4 Moore

101 Varnish - 1011 wood -

1 under Vac 3 min
2 in contact 2 min
3 Up to 60 lbs 3 min
4 The 500 lbs 1 min -
5 Cooled off both sides 15 min
Took Vac off when Turned on wood

During Cooling last pressure gradually went down to 150 lbs,

Lou Ott has made 21 different Kinds of fusible metal We have pressed them on a Master the results are very promising some are amorphous it will require at 80° Fahr 1500 lbs per sq inch — will try effect of rise of temp —

We will make a record from a Master Mould then plate it up 40/1000 with Copper + melt out the fusible metal in Oil or Lecithin according to MP — Can plate Ni on a little + then factory on the Copper

(possibly the back of a fusible metal should be blacked with Copper or Nickel + pressed then it could be silver or gold plated to prevent the rusting surface —

Power 9/4 915

2" dia fus – 300 at least will fully cu Cu bath at 6.48 am –
½ amp –
at 710 put on an ampere –

* Use alloy coats Copper in Cu plating bath.

Will should probably have to Coat surface of record cu this with glass in Vacuum or Nickel in bath Otherwise Cu will not reduce. Transferring the Nickelled disc quickly to Copper bath to prevent oxidation then make Connection to block to the Nickel & to negative Thence with

* Made 2 Sn 2 Pb 1 Bi big plate.

Dried it in press at 600, with free heat of steam pressing on 5 minutes Nickel —

Recast the disc in press with steam heat, pressed it on Withdrawing of Celluloid only tops of leaves placed around Edge – We need Take it up Tuesday 9/12 at 2200 Lbs & old pressure

With the new metal it decomposes acid Copper solutions but not the Copper Potassium Cyanide solution in the it plates very clear & perfect & transferred it to the regular Copper bath & plated it thicker but the Cyanide Copper deposit adhered so perfectly that not the slightest piece could be detached but was however very thin—

On the other part of sugar old Copper was put the whole in dilute & melted out the metal but found not to say that the metal amalgamated with the plated Copper so the plan of melting out Can not be used

I will probably have to get plated in Vac bath with gold or put in a Reg Copper bath

and quickly connected to Circuit, it can then be detached mechanically —

I tried the metal in German Nickel solution it plated 7/10 of a thousand. I started to peel at Edges (E) Turn up — The Nickel was easily detached so here is a way that process may Can be used after preparing the record and it just covered with Nickel equal to the amount we put on Wax Cast & transferred wet to the Copper bath & plated the 40/1000 thick & detached. I think the Ni will stick to the plated Copper

The Nickel that I pulled off showed a very mirror like surface —

[illegible] Dark alloy is not known [illegible] parts settle out here. It cannot be used until get a better one

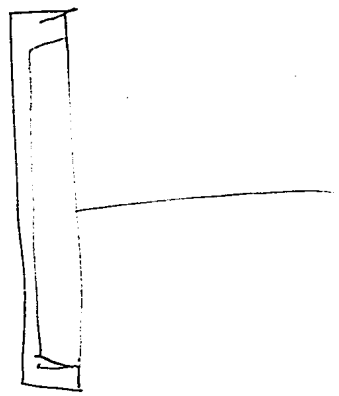
Tried pressing a number of times [illegible] 224 by thermo – heat 5 min pressure 500 lbs + immediately [illegible] keep pressure up perfect + immediately [illegible] get [illegible] quite yellow [illegible] 500 lbs [illegible] [illegible]

When ready to press Remove the package warm & pressed & dead cold 1500 lbs [illegible] sign of sticking blank also not stamped & removed OK no sign of [illegible] [illegible] [illegible]

Drawings and Blueprints – defective, [illegible] [illegible] [illegible]

its full of dirt
before

Took a No 7 transfer peel plate
on peel in press used vac peel no
pressure on - 6 min at 5 LBs steam
pressure 225° chilled it
blank never touched my pressure -
On examining it all the Grey
yellow transparent spots sparkled
way up showing it was air
trapped in Cementing transfer on
the blank even thick with
pimples mostly at outer edge
& near center - there were several
groups where the rows of pimples
like record - these pimples are
unmistakenably air in the varnish
Put in by the brush + core the
Causes of Crackle -



Notebook Series -- Notebooks by Edison
Notebook, N-12-12-04

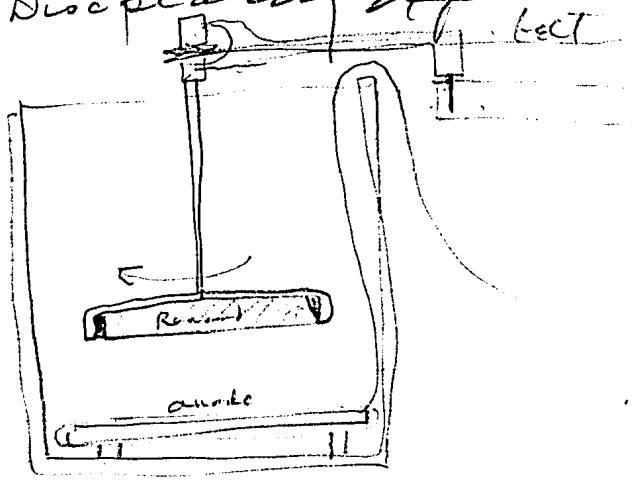
This notebook was used by Edison on December 4, 1912. The entries pertain to the electroplating processes involved in disc record manufacture. Most of the notes relate to problems observed during electrolysis, including dirt and gas bubbles adhering to the plated face of "master" and "submaster" molds. Also included are notes on modifications to the electroplating tank. The pages are unnumbered. Only five pages have been used.

Dec 4 1912

Experiments to get rid of gas bubbles which clung to the disc masters + submasters + also dust which persistently adhere to face of the gold + also the copper resulting in thousands of specs of extraneous matter which is plated in the Master Copper record + which finally ruins the great previous effort of improving the record in Condensity, producing depressions in the metal most of which Cannot be observed by the Microscope but which nevertheless produce crackling sounds in the finished record which is objectionable when very delicate Music + fine overtones are to be made audible in the phonograph —

Dec 4 1912

Disc plating Expt



face of record is down & rotated 80 Revs per min —

The Anode is covered with a Cotton bag to keep the sludge of impurities from anode being thrown into the Solution & sticking to face of record, the rotation not being able to detach it

Dec 4 1912 Contd

I found Cotton fibres came off
& get on faces of records
& that linen & Cotton on the
fibres do not come off being
of Enormous length as compared
to Cotton

We used Reg Rudolphi's Copper
plating Solution, rather
acid +

As the cotton of the
record does not have much
velocity the dead Cotton name
therefore goes & adheres

We are using filtered air
passed by a pipe into the
Solution to agitate the
Sol to disturb fibres &
which it does but it also
boils so to speak the liquid
& any specs in it are
thrown against the faces

Dec 4 1912 Contd —

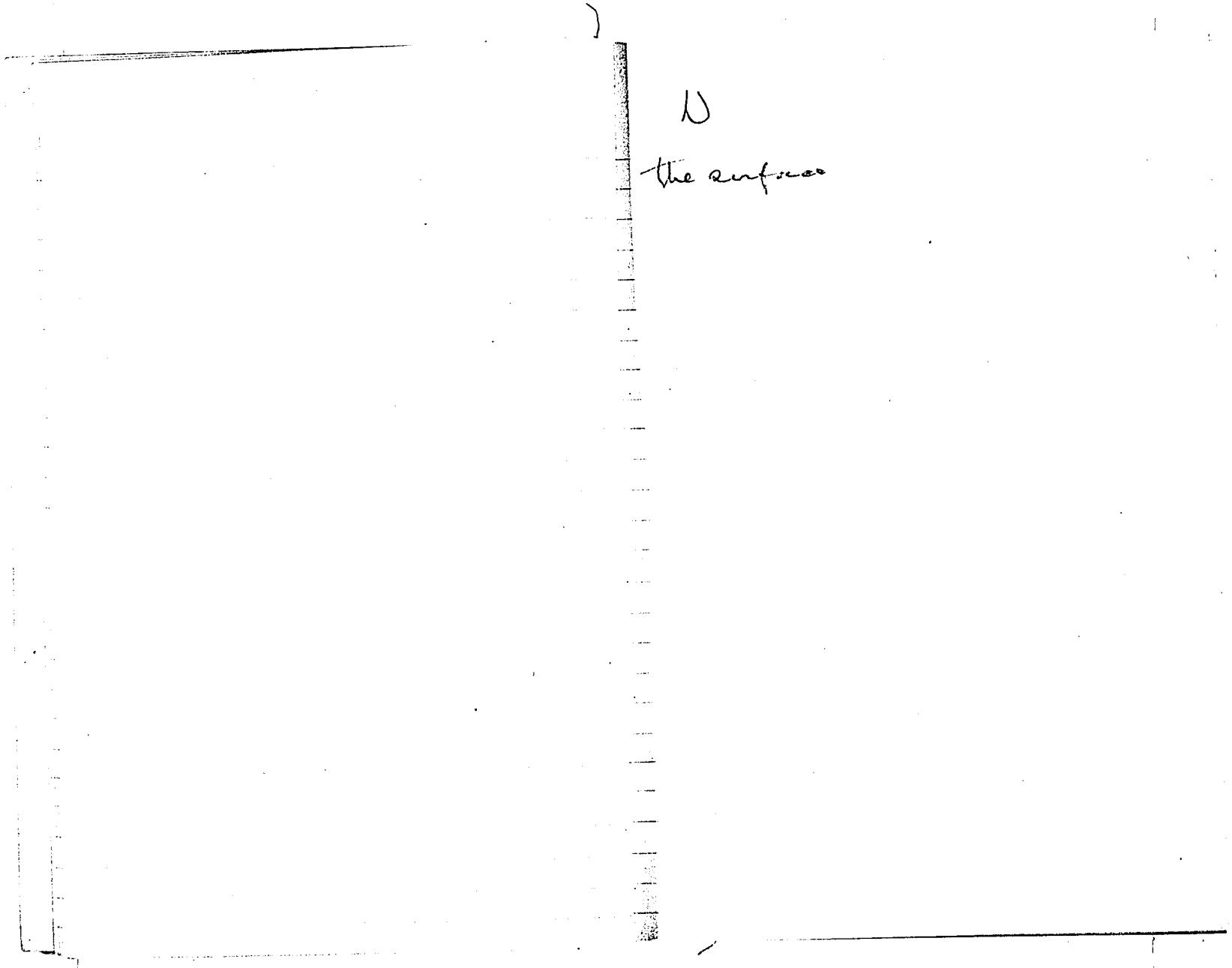
of the record so the remarks are nearly on hand as the occasion

Have tried strings, brushes, the latter serves the good purpose it is hard to work off steam

Another bad thing is that the impurities formed by bacteria float upward

If the record face is on upward then those that had company would float up but those that had not would lay on record,

Another bad thing is that only substances with personality get on surface of record. Especially from sweat glands of hands & skin abnormally increased


N
the surface

Notebook Series -- Notebooks by Edison
Notebook, N-13-08-05

This notebook was used by Edison during the period August-October 1913. The entries pertain to the transfer and molding processes involved in disc record manufacture. At the beginning of the book are notes on experiments with varnishes and other resinous compounds for coating record blanks and receiving impressions. The middle of the book contains notes on experiments involving the preparation, molding, and composition of record blanks. The last half of the book contains a summary of "Results of many Expts last week" involving experimental transfers made with various record blanks. Notes on these experiments are continued in N-13-10-31. Edison's notes indicate that employees Peter C. Christensen, Charles Dally, Archie D. Hoffman, and Frederick P. Ott assisted him in some instances. Inserted into the book are two loose items, including a memorandum from Ludwig (Louis) Ott to Edison regarding a supply of a phosphorous compound. The front cover is labeled "Disc Records 1913." The pages are unnumbered. Approximately 110 pages have been used.

Aug 5th 1913

Expts on Varnish for disc Tracings

No 1

Req Phenol resorcin 6/4 (15% Extra from Req) Already

2616 grams Varnish — as dated
1333 grms Trichlorophenol 666 mlq
Dr Hahn Pararosaniline 4
250 mlq Ferric Chl as dried —
Turns black on disc — 4 rev 1½
above hot plate, on 1140 am -
Set 1152 12 minutes,
4 platinum 2 no bubbles, 1 2 or 3 small 1
Several of ⅛ dia — Very dark on plate
opaque —

Comes off easy - all each
brass plate,

Brittle

No 2

26.6 Reg V 6/4 15% Extra Lake No 1
1 333 Trichlorophenol.
666 Ethereal Para.
250 — Cupric Chloride —
on 1155 am. — Turns blue dont
seem as of $CuCl_2$ dissolves
Set 12.16 — 21 minutes —
after set little darker than 1 —
dont swell so much few very
small bubbles on both more
shiny surface than No 1 —
No 1 is matte No 2 is Japan sheen
no sign matte —

Comes off easy
Stainless plate — not very
Brittle, dont puff away
from plate

No 3

26.6
1.33 Trichloroglycerol
.666 Dekham Para-
250 Mlg Permanganate '12
Turns at 6 Sec ~~[illegible]~~
to ~~[illegible]~~ —
On. 1204½ - Noon - Set 1224 —
Lots bubbles all over —
up To No 4 No [illegible] bubbles —
full bubbles - Stuck to
plate Sad - dark Red —

No 4

26.6
1.33 Trichlorphenol
666 Dehren
250 Chl Tri —
Donut brackets keeps adjacent atoms
Color but Opposite on Tri Chl
adjacent derivatives —
On 1220 qui — 1234 sat.
after Set Late Enables all over
Bath plates — Red & transparent,

Roncochat Guttle
Comes off family Essay
full Enables + Red

Duplicate — Except Reg Vermont Pencil + Pen

2 poured + dried in air

2 poured on plates on glass 1 ¼ high —

ZnCl hard developed it cold 20 mlg not clear —

5

26.6
1.333 Trichlorphenol
666 Dekalin
250 CCl4 Zn

Hard drying Zinc opts mixed. Left bulb on steam plate 1/2 hr. Alcohol boiled then it turned clear req seed 2 or 3 on 1238, set 1250. 12 minutes Red + transparent

Considerable necessity bubbles which appear after set there is true of most of them, NO 1 Great in the respect no surface as mentioned

This varnish set in 6 or 7 in less than 1 hour

All the bubbles are round 1/16 dia most burst them —

Comes off Easy - all on plate. Not bottle —

26.6
1.33. Trichlorophenol
666 Diethanol Para
250 Oxalic acid
on 1249 $\frac{1}{2}$ =
Oxalic dont dissolves dont
seem to have any action —
Sat 109- 19 minutes —
transparent red -
Lots bubbles come when it
gets —

Comes off rather easy
all acids brass Red full
Cracks & bubbles

No 7

26.6
1.333 Tri-Calcium Phosphate
666 Dicalcium Phosphate
250 Chl Calcium fused

On 5,01, Set 521 Red

Very little trip - scarcely attacked
Brass Comes off perfect no
bubbles - soft low temperature

This looks good if
not affected by water

Was on 1" glass plate about
hot plate fell night before
putting right on hot plate

Trial of 7 8 9 10 11 + 12
Dont seem to be affected
by water —

708

26.6
1.333: Trichloroethanol
666 DE Haem Pectin
250 Cerous Chloride

On 502. Set 525

broke bottle —

Normally attacks brass plate
Comes off perfect very transparent
red only 2 bubbles —
fairly soft low temp —

No 9

26.6
1,373, Incalcareous
660 Dolomitic Phase

250 Mud PbO_2 —

On 504 Set 525

Impregnated coarse off
pleas little hard one pleces
not very soft low limp
altered plastic very little
fuel Gibbsite —
no reaction — No Vermiculite
Leaching Green —
Not Ca

No 10.

26.6
1,333, Trichloroethylene
666 Dethrew Pond
270 glucose phosphate

On 505 - Set 525

Treatment used - Conc. 66
plate perfect scarcely any
attack on plate, not very
soft low temp -
very few bubbles

JK011

26.6
1.333 Trichlorphenol
666 Dichloro Phenol
250. Magnesium Chl Aluminum

Phenol — No soap bubbles or bubbles in liquid on shaking bottle & surface tension must be very different from the others

Looks like Cat Rhen — for Clove precipitate — this would make it less viscous & less bubbles on 4.58 - set 520

Attacks plastic cannot — only few bubbles — Comes off plate easy not very much low temp — Red —

No 12

26.6
1.373, Trichloroethanol
666 - Dettmer Reagent
1.000. ZnCl, 1

Precipitate Opalescent
Clay like - Strong
On 5 pm — dilute kept -

Considerable Globules —
attacks plate a little,
Very soft Low temp (Red)

NO13
2616
1.933 Thiel College
666 Dellora Press

676 Varnish 4% Parachloroanilin only — gave very bad % on transfer, but perfect on print, Dimroth finds this has twice the Contraction as 521, it evidently Cooks in press & contract very much but after transfer it has very small contraction & hence gives high % on printing —

Evidently our Oven cooking showed 6% hooked nuts to allow so much press contraction,

No 14

2616
1.333. Trichlorophenol C
666. Ecklonia Prima
3 gram phenol Resin
on — 335 L Set 405 —

Strong No leachables, not very
soft at low — Red Leak —

Some doubt about it being
3 or 1 gram Resin —

Attacks Grows a little —

Comes off [illegible]

15-

26.6

1.333 Trichlpheual

666 DEH para

5 grams phenol Reagent

on 3,36 — at 3 57 21 min-

Connecticut Penny — Red, foamy

raft — only 2 or 3 across

Galactic —

16 -

2616
1.333, Trichloroethanol
666 Diethyl
1 gram Phenol Red
on 337 at 356 19mm

Comes off very easy don't attach brass plate, Handy
aft low temp ~~[illegible]~~.
Must be wrong amount
Phenol Red - Red light -

17

26.6
1.333. Trichlorophenol
666 DEH para

10 grms phenol Rem
not necessary

on 337 Set 357 20 min

Comes off very easily
deep grunt 2 or 3 bubbles
Very heavy at low temp
hardly discern any the 6 rem
plate. —

18

26.6
1.333 Trichlorethane
666 Dettpram

4 grms Cresol Resin

Comes of only [illegible] Epoxy
Resins [illegible], that
left at very low [illegible] Rad

19

26.6
1.333 Trichloroethylene
666 Dieth prem
250 Mlg Black Oxide Copper

on 3.53 — set 4.15

Comm off Evap — raft at Cond

Mettler balloon recovered —
not prom 15 or 20 TB&CC

20.

26.6

1.333 Trichloroplenol

666 – Dett fona

250 Mlg Picric acid

Burated Cattle —

full buggies – to sundown

hot [illegible] ...

time of 20 to 25 –

Gourmet fanning duff load

Rock plated ...

Mg Clunk –

21-

Reg as 20

with 250 mls

Hydrosulfite —

Dried on plate all night

in air

Comes off pretty easy

Very soft mil (wax) ; dark

from Hydrosulfide fuses on heat

may be precipitating —

garnet.

22

Regression on 20

250 mg/g Ferric K

Dried in oven all night

Very Erosive ~66 Dent attack
plates, float, soft at base

Red — Promising

23

500 Mily Ferric Chl

Dried in air all night

Orange black allicate
plates, within crystals of
lead, many [illegible]

too much iron —

Dropped bottle in 23424
and taken up some three mins

Evidently Fe_2Cl_2 Condensate

24 –

1 gram [illegible]

Dried in air overnight,

Bad – [illegible]

[illegible]

Not pure

25. –

250 cc of Glacial Acetic

Dried over ACC weight

Common Ewing only collected
pale light – making smaller –
light red – don't think
its pronuncy –

Comes off plate good
Nickel plate, 5 mins
plate 2 mins
Very soft at low
temp

Acid penta part of Penta
from dried/decahalic solution
which forms a salt with
ammonia solution is
used in ammonium salt
determination — precipitated
by HCl, washed + dried —

26.66 Req Vanadium
15% Extra 6/4

1.333 acid penta
666 DEH as Penta

5 at 11th 5 pm put on plate
in am —
Sunday pm neither plate or
kettle fired — put on 9 am
1½ up found at 9 am Monday
Set, ~~on~~ practically no bubbles
Lowered glass to ½" at 9 am

omits nickel plate Lad
from this Exhaust
Say acid pickle as
what is wanted—

27—

Same as 26 but
1,333 Jar part of
Alcoholic paste—
1
11th Saturday put on 4
plates in air to dry
5 pm

Sunday pm neither the plates or
bottle had fried — placed on
glass Same as 26—
There are considerable bubbles
on — besides the froth that
was on originally
Extra soft when heat, but quickly
becomes brittle at much higher
temp than 26— its Awful brittle

All veneers are attacked by
Rot, forming innumerable rotted
holes, these swell up - as if there
was segregation in veneer each
in event of Extra dry Condensing
there is the same effect,
The rotted parts seems not as
Condensed on the rotter
as plain which not been
further Condensed in Drying
give many more holes than
after Condensing

Noticed that stripped film
from plate, do not have
holes in Top of Varnish
where air gets to it but
only the bad ones in
Contact with Plate
which is bad for it
as there is top air Drying

I notice that two veneers
one rig with Pentamount
+ one with Pentac Tar after

strong condensation by layer of Steam plate with glass covering then Leave held for 1 hour – that the Penta-acid plate is not affected in 20 mins by Roth Schneider Test is very Considerable affected

Took one of Daltyp 2 Nov plate which has been dried thoroughly & pumice & Hands wear Test — This plate put on hot plate & 4 hours The parts that puffed up & decided not the big continuous heat is strongly attacked by Roth Test the other part which Clerk to plate was not attacked during time test was Roth — Cu2 —

28 – Trioxymethylene
8% taking place of
6/4 = put a guessed
quantity Pentaerid
in – 6 pm Tuesday
3 plates
28 1/2

all night 1/2" above hot plate on
glass not condensed upset it
night on hot plate 1/2 hour just
get rubbery mass did not go
further put in 300 mls
BF_3 to 3/4" of Nonanol –
Keep in oven – Vacuum Pump
Bleeder

Dont get rubbery on
glass Volumes 29 +
30 gets Rubbery

29= Vern weak Trioxymethylen
666 mily Dethacum Para

gozo rubbery w bare Hand I hour
Volute at dinner

Thus places that
without Para -
Trioxy dont condense at
loco dont volumes by
Condensin / weak Para
like formaldehyde 18 cy
with ammonia

good point —

Some 1/4 @ 1/16 bubbles —

All night hot plate - big bubbles
Ether evaporated soft but VERY
hard Cold

Where is second Ammonia
with this —

Note 29 Condensed
over night on Bottle
30 Did not condense

Dilute Condensed Milk
Condensed Milk
Welcome No 29
Condensed

Dilute Condensed Milk got rid of this Vermouth with CO2 & Extraordinarily soft water —

30. Vermouth with Tricyanmethyl
•666 DE Kerin —
~~1337~~ 666 — Pentacetic —
Glow rubbery in Cells
than 1 hour delete at
dinner —
on Complete, some 1/8 @ 1/16
bubbles —
Nightmarey all night, one last shot
dessert very soft last, ~~bubbly~~ not fizz
Think I have a good point-and-shoot.

I find that formaldehyde
powered in Solution
(Paraphenylenediamine
Condenses & Cold
to unfindable product
S S
not sol alcohol

Oct 19 1913

Experiments to make powder blanks with a smooth surface

No 1

1st one made in little iron screw press —

Cresol Resin 20 grms
Chalk 100 "
bleached 30 cc

Moulded perfect 3/8 thick fired OK Could break it use dried the bleached out & powdered it up again — Cut rather hard.
This is 4 to 1 — Weighs
35½ grams 2¼ X 10/32 thick

A Reg disc moulded weigh 700 grams — 512 grms of 1/4 inch thick —

This is no good when pressed with Edger free - it squashes out

No 2 heavy & one fabric - only squashes out 1/16 more in Diameter & is OK - by using a little more fabric it would squash out very little

Oct 19

X802

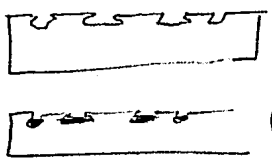
25 gram wood pulp
100 Chalk
30 Cream Rem
60 cc Alcohol
10 China Clay -

25 gram 7/32 thick -
one place Resin segregated -
+ fine surface like a Lumafas
the other part good surface
but shades some surfaces
req powder blank but in a
unfortunate way —
Evidently springy fibre is not
good,
part where resin segregated
can readily be cut with
knife very hard, Fredett can't break it
Think Alcohol was not
all dried out,
Disc would weigh 480 grms

Our presses are more
than Hoffman & little more
than in Lumafas

Squeaker cut 1/16 more
dia but is inched +
good - This is equal to
1/4 more dia on 10"
disc 50% fibre would
probably make it
about same as req
powder blank
surface except where
black to mould is as
shiny towards as
a Lumafas - There is
something in this

Rubbing Chalk containing Crystal Resin on surface of a powder blank only impregnates surface a little. The chalk is always below the general surface



Every paper wears off & brings it level with black until it is all level & end surface through & large holes disappear

Put some film made of wheat flour & water on inside powder blank & squeeze down good & evil started to mould apparently it allowed black & resin to flow as it filled last holes & could possibly should use greaseproof waxed chalk

No powder will flow -

Graphite in pores of surface
Mg - Becomes impervious
blank it compresses as a
whole like top dont flow at
all - it wants some
trick whereby the surface
flows - The flowing

find that 75% blank
powder with Cr and
Ren in - Mesh Co
mixed with 25% Tolerun
powder + gives more
even flow + better
surface - very strong
fred OCC Can't break
2 1/2 by 7/32 thick -

Oct 22 1917

Expts flowing Reg Var on glass plates dried to make a very thin film pouring Var on bench glass, dried over night then in 4 hours heat up from 120 gradually to 212 + kept 212 for 2 hours - These 3 t Coming off Easy so there will be no difficulty in pulling off hot + possibly chilling off by Condensation -

Sesame oil as the

best Canadian next &

Oil Banner next.
Comes off pretty good without rubbing - preferable on very hard ones
The others - Cyclone oil -
Canadian Cod liver oil -
Caramel - which was only one that absolutely would not
Come off at all
Oil Cards - were poor
hard to pull off -
could just scratch surface
not as greasy condensed as Reg

Think plain glass will do the
trick, will ring hard on - perhaps
Sesame one ring to sling leak -
after new dry ring can be removed
Freezing - Can take off by
standing Edge of envelope by chilling

Oct 24 1913

I find that Wood fibre board with gelsonite dressing & Talcal. makes blank yarn Can not Can Req Von over & headed in Cross section that it is showing more than that due to unquenched gelsonite Also find that wood fibre without any binder & til material resin it has can be flowed & baked at Rm and pressed thereon

Am mandating Cannot of other Wings & Starch — ing —

Brow

Received & Cabinet —

Hardened & flowed Cork 3 hrs from 120 up 210 — The one having gelsonite — 15 To 100 fibre gave pebbly surface Cut, the fibre without anything made not gave only few bubbles when

Oct 24 1917

put in oven fresh & the one dried 3 hours ~~chicken~~ before putting in gave us beautiful

from this We can use wood strips, waxed with edge raised to prevent vermin ~~from~~ ~~over~~ edges, Dry in oven 3 or 4 hours & then put in oven bake, & transfer each blank being 1/2 ~~hour~~ hour & ~~when~~ when putting put together & ~~punched~~ punched each side

It will be best to press the blanks before pressing with greater pressure then they afterward get & gradually ~~cooking~~ cooking before ~~following~~ following —

The one that after baking 3 hours before putting in oven & had the rubber is 40/1000 thick — it pulls surface of blank off with it

Oct 24 1913

The Van Dorn seems to penetrate more than 1/1000, where there are deep holes in face it goes in

On preparing veneer work to mount the block too frosted on surface to detach it, peeled veneer too green not hardened enough — probably ought have to use a little resin varnish on other surface of plain wood block to make a less frosted surface to help detach Rhead surface from mount —

Offset by superposing a Reg block with paper on & transfer on & then removing the veneer & grinding the surface of Cat block when you make a new transfer & print the surfaces are fine for We can use a removable block veneer many times & it will stand heat of press - it may

Oct 24 1913

plastic. make Surface of blank
Egg shell but this we grind off
to the Egg shell Coat and then get
over rough surface on
Record. The handle we have
them turned with the Blank to
Mat in Veneer on Record Mould
the Question to be a job to Com
this out Commercially —

Experiments with Bases.
from Indene Dyes in
place of
Parophenylenediamine

No 31 –

Rhens Brown ET –

32 = May do ~~for~~ to Replace
Perla or Para
Important for Dye BLACK
any way –

after strong final Condensation
obtaining its transparent by
transmitted light, Very deep
Red black by reflected
Light

32 = phosphine 11 mds. Sol ok
Rubbery – no Eggballs, black
only one up To 40 thick free of
Eggballs after 1st Condensation
Note – This is a fine Black Dyer
for Condensite, 20/1000 opaque
& very little does the trick –

33 – Marking Yellow Y –
good – Red – Edges off plate
no smut – deduct smut up
no bubbles –
Very tough – Pronounced

34 Croc Scarlet. M.O.O.
ng

35 Bis Brown 2 RX –
Red like Reg - scarcely any bubbles
good – Comes off Greasy – might
do without Paula or Paris –

36 = Aurantium O O B Cone Sep
Went nicely at 4 pm
one glass at 11.54 – next Sept for
bubbles To XO 32 – Red like Reg
Not brittle, bubbly – a/T

37 – Rhino Bracon A T Cone
Went nicely 4 pm –
put on glass 11 54
Hard set off plate, Red, not
black enough for Oyz –
Very bubbly –

38 Napthol Blue MS
This is as black as I dye for
Condensite cans 32 Coat it beggars
up very bad —

39 – Chrysoidine R. very Sol –
Rubbered at 405 pm – 4 hour
Red. Every 66 plate – Lumbering

40 Green M –
Rubbered at 405 pm 4 hour
Britte – Dyes not soluble enough.

Most of the preceding dyes
are not very soluble in the
Varnish – Large Crystals –

31-32-33-34 934 Set rubbering at
230 on plane 1½" high – on 1154 –

Oct 28 1913

Comparison of properties of Phenol Resorcin & Cresol resin under heat

		82 Phenol	Cresol 24 P 217
1	Soft Like Molasses	210	217
2	Evenly melted Like Molasses	220	225
3	Melted Like Table syrup	270	
4	Start Evolution of gas	275	230
5	Rapid " "	355	260
6	Nearly clear of gas	385	360
7	Clear	390 400	370
8	Gets cloudy	420	
9	Skins forms Melt Like Phenol	440	500
10	Evolution gas starts again	460	580
11	Quite a little foamy	500	550
12	Foams very much	520	550
13	Max Temp reached	560	560

Note very little if any solid forms on Cresol - The 2nd Evolution gas in Cresol is very much less than with Phenol

26·6 Req V 6/4 without Paula or Pam

10% Hexachloroethane —
Dissolves ok clear
Comes off fine no bubbles
Pretty strong —
Thus changed mk ground
Req with Paula or Pam —

20% Hexachloroethane
Crystalizes out in drying
on plate — Clears up beno
on glass 1" — British Wallace
petroleum after dried hardens
(bubbles) —

50% Hexa dont quite all
dissolve, crystalizes out
till opaque —
Clears up on glass 1"
NG — Crystl out
on condensing

after fully Condensed clear
Very Strong, can cut spread.
Chips — bends quite fair lump
Think This is some form of
Regulosi — its very hard
not brittle no bubbles —
Very slight
Note Haffman Makes some
Varnish —

Note 50% of proper unaffected material
put with Varnish
Contains Reg 6/4
& Condensa + act like
Reg Condensate —

1.6.6

1.333 Tetrachloronaphthalene
Only 90% dissolves —
got to heat it on a Cross 1" length to
keep it from Crystallizing out
in liquid —
Cracks up on a Cross 1" from tab &
few bubbles — funky Condensed
hard — Tough not brittle
Comes off okay

2.666 - Dekhan Pentaphenylenes

5.332 Dekh Para — flexible rubbery
hot — Brittle when cold —
This shows that 1/2 + 1/2
of a proper material will
make a Condensate & probably
less flowing or Rubbery cal

Thin Can be used

of necessary

Oct 29 1975

finely ground charcoal

makes a good blank 2½"

but it will not release

equeeze ground Can at

Edges 100 Charcoal 35

Gradual Reem —

Will try Reg plate Vacuum

use of Condensate water

Pressure Grind Can

Pat Edges

Dried wetting fibre with

Thinned Resinate of Na

(Resin) — Then dry —

The soak in CHC Cakem

to make Ca Resinate

then wash + dry —

This is good blank -

dont equeeze out at all

transfer Cake OR -

Oct 29 1913

We find that the powder
flask is very much improved
by using 5/4 6/4 in Reg in
to fire ~~it~~ 9 steps clicking
to thrower in making charge
gives very perfect even
charge at present
flows The burners often
Running three neg are
very good but RO are clean
The RO we find are due to
too low temp in baking
~~Charge~~ increase to 225 —
There Oven
run three on 5½ hours
& get up to ~~260~~ 260, only
used 2 Runs in 20—
on Reg charges neg
process —

Oct 29 1913

Churchmen tested
10 Records (Double Transfers)
up to 120 Fahr 1½ hours
OK — then took same records
Put 10 in chamber each
Solid CO_2 & brought
them down to 42
deg Fahr Below Zero
for 6 hours — the
taken out & brought
right out into Lab at
80° deg Fahr each
were OK except one which
was Cracked from hole to
Edge both, the weld is
perfect It only gave
a slight snap on playing
the cracked Blank, it would

Oct 29 1913

It noticed if music was on —

The surface when covered with frost was good —

There was a number of places showing yellow on original record —

These cracked around outer Edge,

This is of no significance as we scarcely ever have them —

Therefore Double Transfer is OK + the record between the two ~~one~~ is perfect —

+ we can use them whenever necessary

Oct 29 1973

Fred Att Run a Cage Free of Varnish plates up To 300 by 1/2 hour. 50 deg rise last hour 25 deg hour — These plates had already been baked Req up To 225 — 8 out of 10 were OK 2 lifted after Trichloroethylene + primer NO Rout

Made another with baked plates

started 6 50 —

	7 45	200 deg
30	8 15	225
30	8 45	250
30	9 15	275
30	9 45	300
45	10 30	325
45	11 15	350
45	12 00	350

No ammonia Comes off

Afterwards found Some ammonia in box which probably came out of pores on cooling 8 out of

Oct 29 1913

10 of these were free of the plate & some lifted — All could be healed & flattened — They were so highly condensed that the full heat of the hot plate scarcely affected them enough to bend. They may not be soft enough to print at 100 lbs steam pressure —

Want probably 280 instead of the usual 225 & therefore that be enough glue formed internally & veneer when transferred at 320° Fahr to make them smooth

Dallys run at 260 - were almost free of Rim Cracks. 18 out of 20 were OK —

We weighed the Veneers & found

	1	21.7 gram	6	19.9
	2	18.6	7	18.0
Thickness	3	17.5	8	15.3
Condition in	4	19.7		
glow room	5	16.9		

The Caliper of the 8 sheets

1 —	13	To	20/1000 inch from edge
2	12	"	16
3	12	"	16
4	14	"	17
5	13	"	15
6	13		16
7	10		16
8	11		14

100% Variation

Fred ECC Running Transfer plates
Heat run Green Room & Oven at
225 – Room in preliminary
furnaces —

1	Hour	200
1/2	"	225
1	"	250
2	"	275
1	" Hold	275 – Slight Tree Cracked edge only

80% Cracked, some lifted
2 only OK –

There is shrinkage in these and finish
Heat Oct 28th Lot run at 300
80% OK. –

Dolley Jewels some Conductive
Heat 1st run 1650 plates 6 hours
run to 260 – 91% OK. Gal lifted

Next run – 275 – 1 hour longer
50% lifted —

Must be that preliminary stage after flowering has something to do with this —

Dalby is now making a run with short drying after flowering & long drying & running with Logadhen in same furrows.

Dont Think Hexachloroethane is any good - Volatilizes with Heat from Cooking water

Cant say if it Combines with Cellulose or not dont think it does —

Reg Vanmark Recipe

225 Fahr Bake — Let 1531 —
Van 632 —

With 214 gm wet on 1/2" wide - 2 1/2 long

48° Fahr	to 100°	.0100 Expansion
100 "	to 140	.0180
140 "	to 160	.0520

With 428 gm wet

48	to 100°	.0100
100	to 140	.0175
140	to 160	.1265 —

I find that Penta and pure Carbon with Nitty is very valuable and Combo at 200 Bar

Also that acid itself does same thing.

Will now investigate about the burning of Coke —

Charcoal Blank

25 phenol resin
45 acetic
95 Charcoal mil
5 s/o 6/4 —

These are dedut showing gave no RO + gave confirm but cracked Glass

No 3 Freed

Freed & McClennen
furnace — 60x 14in
Then Cage of transfer
plates 10 plates

Nine OK 1 left 1" dia
probably might prevent
These plates had already
been thru the oven to 225°

Schedule

1/2	hr to	200
1/2	"	225
1	"	250
1	"	275

Immediately cool in
box.

Results of many Expts Last week

213 Blanket. Valley 275° Veneers Reg Schedule
Printed Reg 12 Transfer
Transfer Efficacy OK 9-
Cancel 1
Discards 2 Chipped Edge

Printed 6 — all OK —

Good Surface	2	Run Outs	7
Loud "	8	No runouts	2
Very Loud	1	faint	1
fair	1	Bad RO	1
	12	Double RO	1
			12

Surfaces
Bad —

Run Outs
Bad

723 Blanks Req Van plates 632 Van
12 Transfer free release 10
slivers 2

OK 6
Conical 3
Dia 3 1 cracked.
2 Rubbed

Prints 6 all ok

Good surfaces	5	Run outs	5
Very good "	1	No Run out	3
fair "	3	faint	1
Loud	3	Very faint	1
	12	Bad RO	2
			12

Surfaces
Not good

Run outs
Bad

723 Blanks -

Plates by Dalley baked 275.7.
Req schedule 12 Transf
Free releases 9
Stuck 3
Transfers OK 9
Cancel 1
Discard 2
12

Prints 6 —
5 OK
1 poor print

Loud surfaces 5
fairly " 4
good " 3
12

No RO 7
Print 3
RO 2
12

Surfaces
Bad

Run outs
fair -

723 Spec Blank

Dallyp plates 275"7
Reqscheduler — free release 11
Sticks 1
12

Transfers OK 9
Cancel 1
Discards 2
12

Prints -
2 OK
3 poor prints
1 Cracked - Discard

Loud Surfaces	2	No Run Outs	2
fairly "	2	Run Outs	4
good "	4	faint	1
fairly good	3	Very faint	4
Very good	1	Damaged RO	1
	12		12

Surfaces not good

Run outs not good

722 Varnish Req Blanks Req schedule
6 Transfers 4 OR - 2 descends

Prints 4 OR -

Loud.	7	RO	2
fair	5	faint	3
good	0	No RO	6
	11	Double RO	1
			12

Surfaces
Bad

Run Cuts
not given

719 Blanks Daily plates baked
275 - Req scheduled
12 Transfers Free release 5
Stuck 7

Transfers OK 10
Discarded 2 chipped Edge

Prints - 6 OR —

Very good	2	RO	2
good	5	Bad RO	1
fair	4	No RO	3
Loud		faint	3
faint to good	1	Very faint	2
	12		12

Surfaces fair

Run Outs fair

719 Blanks Daily 275° plates
Reg Schedule 80 lbs steam
printed also with 80 lbs steam
12 Transfers Free Radicals 3
Sluice 9
OK 6 Discards 6 –
Printing: 6, all ok –

V good	2	Run Outs
good	6	Bad RO 1
fair	3	faint 1
fair to good	1	No RO 9
	12	Very faint 1

Surfaces
good

Run Outs
good

707 Blank 632 Van Lot 1526

6 Transfers stuck 2
free release 4

6 all ok

Printing 6 all ok

Loud	3	RO 9
fair	7	Big RO 2
good	2	faint NO RO 1
	12	12

Surfaces Bad

Rem Quite Very Bad

418 Blank Baked 280
632 Van 60 lbs ream
Req schedule –
6 stuck to place
no free release –
OK 4
Discards 2

Prints OK 4
Printed 60 lbs –

Load	2	RO	1
good	1	NO RO	3
fair	3	Big RO	1
fair to good	2	fair	3
	8		8

Surfaces
Not good

Run out.
fair

718 Blank Baked 250°.

632 V Reg reschedule –
all free release
OK 3
Discard 3

Print. Reg reschedule
OK 3
Disc. 3

Very good	1	RO	2
good	5	Very Bad RO	2
fair	6	faint	5
	12	very faint	2
		NO RO	1
			12

Surfaces not good

Run Cards not good

Blanks baked 350 F.
6 Transfers Required
4 OK 2 chipped edges -
Print 3 OK 2 Dim 1 poor print

Loud	5	No RO	1
Faint	1	RO	4
Moderate	1	Bad RO	1
good	1	faint	2
	8		8

Surfaces
Bad 1

Run Jacks
Bad

12 Blanks - 213
632 Van Lot 1529

Brot 6 Blanks alone up in press in Contact for 20 seconds to season them, then Cut off excess

Transferred Rejected Cuts 6 out 75 Lbs pressure - 9 sticks 3 free sticks

Transfer 8 OK 4 Discs chip edge

Brent 8.

good	3	RO	5
fair	5	Horrible RO	1
Round	2	No RO	3
	10	faint	1
			10

Surfaces Bad

Run Outs Bad

717 Blanks – 3% 6/4 in Tolerance
632 Var

Freescale 9
Smith 3
8 OK 2 Discards

Prints. OK 7 Poor print 3 Discard

good	13	No Ru 8 ✓
fair	6	Bad RO 2 ✓
fair to good	1	
Bad	1	Done&Co RO 2
Loud	1	faint. 6 ✓
		Very faint 2 ✓

Surfaces fair.

Run Outs fair

7/7 Blanks 3/0 6/4
632 Var Lat 15°30
Made 12 Transfers all OK
Req Schedule - 3 freezedown 9 short

Print Req each-Cut on high
used 1500 lbs. with end 1000

OK 6 - only 6 printed

Loud	1	RO	5
fair	7	faint	5
fair to good	1	Req RO	1
good	3	No RO	1
	12		12

Surfaces
Bad.

Run Outs
Bad

5% 6/4
Biennial

719 Blanks - Req scheduled
632 Van
Quick 8
Fresh 4
OR 8
Quads 4

Grant 6 — 5 OR 1 poor print

good	11	RO	3
fair to good	1	faint	6
fair		very faint	1
	12	Bad RO	1
		no RO	1
			12

Surfaces good

Run Outs not good

350 Tabs Blanks
polished –
Req transfering Schedule
632 V – Lot 1530
Free release –

One –

Loud 1 fair to good 1	faint RO some RO

Surface Bad 1 – Runouts fair

716- Blank 1/2 6/4 unit

Req schedule -
12 made 7 black 5 free
7 OR 3 2nds 2 Discards

Print 12 each OR -

fine	2
Very good	1
good	10
fair	8
faint to good	1
Loud -	2
	24

Bad RO	5
RO.	10
faint	5
NO RO	4
	24

Surface
Good

Run outs
Bad

Reg Blanks
75 lbs alcan
632 Var Lot 1529 213 blank
free 9
Stuck 3 - Reg scheduled
Transfers 12 OK
Prints 12 OK —

Very good	3	No RD	13
good	15	faint	8
fair	2	Very faint	2
fair to good	4	Some RD	1
	24		24

Surface good

Run out good -

2K3 Blank 632 Van Lot 1526
Req schedule Cut 2100 Uniform
high used
3 Slick
9 Treat
OK 9 Discard 2.

Print 11 — 9 OK
Printed Req Schedule

good	7
Loud	5
Moderate	3
Low	6
Soft	1
	22

RO	11
Faint	5
Bad RO	3
NO RO	3
	22

Surface
Not good

Run Outs
Bad

213 Blank
Var 632
12 Transfers

50 lbs Sleaves
Transfer of Printing
QR 1
2nd 2
Seconds 9

Printing 4 40R

good	6	NoRO	3
fair to good	2	faint	1
	8	SomeRO	2
		RO	2
			8

Surfaces
Fair

Runoff
Not good

Steam

Pressure	Temp
10	220
15	250
20	259
25	267
30	274
35	280
40	286
45	292
50	297
55	302
60	307
65	311
70	316
75	320
80	323
85	327
90	331
95	334
100	337
105	340
110	344
115	347
120	349
125	352

Calliper of the 719- from proceed

265
274 average
267 269.5
272

300
302
298 } 300
300

284.5

280
285
280 } 284
290

Dif calliper of rides
No 1 9/1000
2 10/1000
3 4/1000

15.5% Thicker

46.5 Thicker

719- Blank not ground finer

			greatest def
230	213		7
237	217		20
230 } 233	211 } 213		13
237	211		6
267	221		34
247	255		16
257 } 257	221 } 239		
257	257		238
249	224		
249 } 248	242 } 236		
240	238		
253	238		

719 Blank 5% 64 ground finer in Back mill — it increases the fabric percentage double percents flowing + expands under heat on —

3 Blanks Transferred
632 Van Lat 1533 - All free from

Transfers OK 2 Coats

Prints ccc ok fine, no eggshell blanks thicker than usual no flow on printing Records kept — Can be made Thinner, too thick now

Surfaces
good-
25% more than Round and Double Transfer
good-6-

Run Coats
good-

Air RO 2
Very faint 2
faint 2

6

703 Blanks Plants Cereal
632 Var Lot 1526
OK 3 Dio 3 free release 6

Prints 2 OK 2 Dio crkd

good	0	Barely RO	2
faint	2	RO	2
faint to good	1	faint	2
Loud	3		16
	6		

Surface
Very Bad

RO out.
Bad.

718 Blanks baked 2 hr

Transfer 75 lbs steam Req reached

Print 75 lbs steam

632 V 6 Transfer 4 free 2 stuck

OK 4 Discard 2

Print 4 OK

Very good	1	RO	1
good	3	No RO	4
fair	4	faint	3
	8		8

Surfaces fair

Run out fair to good

699 A Vermont
Lot 1527 60 co

12 scales — 6 scrub hard
Discards 2
OK 4

Prints 3 OK 1 poor print

quad	1	RO	5
four	6	Bad RO	1
Loud	1	NO RO	1
	8	Horrible RO	1
			8

Surface
Bad -

Runouts
Bad -

699 Varnish High Viscosity
16 mm
Lot 1527 45 cc

6 plates, stuck
4 OK 2 Discards

Prints OK –

good	1	RO	7
fuzzy	2	Bad	1
Loud	3		
Moderate	1		
Soft	1		

Surface
Bad

Roughness
Bad

699-Var 7 mm Vlocity

Lot 1528 45cc

6 free

OK 4 1 Comcl 1 D's

Prints 4 OK +1

good	0	RO	1
fair	4	No RO	1
mod	1	Bad RO	1
Loud	5	Hammbs	2
	10	faint RO.	5

Surface
Bad

Run Outs
Bad

1932 - Var 1530 Blanks 360 grams
213 blank -

free release 12

7 Contact 2 Low 1 hour high
9 Cool —

Prints. 9 ok 3 poor print

Very good	1	RO	3
good	6	Bad	3
fair	3	No RO	3
Low	2	Faint	3
	12		12

Surface -
Very good

Random
Bad

Req –
2 mm contact
1 hour 1000 lbs –
Cut off current and reduce to 60% after 15 min – put it on slowly

Good	1	RO 4
Fair	2	Bad RO 2
Load	5	Count 2
	8	9

Surface
Bad

Remarks
Bad

Reg
60 lbs steam

632 12 Trans 10 Quick fire 2
& 10 seconds chipped Edges
4 OK

Print. 4— 2 OK.

good	4	RO 2
fair	3	No RO 2
Loud	1	faint. 4

Surface
Not good

Run Over
fair

Rig —

7 high 1000 lbs
2 600
7 Low,
6 Coop-

free release 2 stick 1

Transfers 6 OK 10 no 4

quad	6	RO	1
fair to quad	1	No RO	3
fair	3	fair	4
	10	Bad	3

Surface
fair

Run gets.
Bad

Req

Dont cool shut steam of
20 min then turn on water
12 Transfer - all free

Printed 6 OK —

good	5	RO 5
fair	2	faint 5
Load	3	
	10	

Surfaces
Not good

Rough
Bad

Fired @ 1b 300° recorked

plates

3 transfer - stuck

Print 3 OK

good	1	RO
fair to good	4	no RO 5
fair		faint 1
loose	1	

Surface fair—

Remarks fair to good

704 Blank

Raised in Vac Drops

632 V. Reg —

3 Stuck 3 from

4 OK 2 Discard Edge Crack

good	0	RO 6
faint	3	No Rd 2
loud	2	8
faint to good	3	
	8	

Surface Bad

Run Out Bad

Req 90cc 213 Flux

OK 3 Dw 1

good	2	RO	1
mod	1	Bad	2
fair to good	1	NoRO	1
fair	2	faint	2

Surface -
Bad

Remarks
Bad

210 blanks 10% 6/4

4 Concave 2 To 1 powder
2 Low
3 High all free machine
4 Cable

Print 2 Concave
1 Low
1 High

fine	3	RO	5
good	6	faint	4
very good	2	no RO	3
fair	1		
	12		

Surfaces good

Run outs not good

720 Charcoal

Shrink 3 from 3.

all chipped + cracked at Edges

Very good 2
good 10
12

RO 4
V faint 2
No RO 6

Surface
good

Rimcut
faint to good

Req = Rumby Dally 260 Fade
6 hours —
Req schedule

Very good	2
good	13
fair	6
Loud	3
fair to good	1

RO	1
No RO	18
Faint	4
Bad RO	2

Surfaces
Fair to good

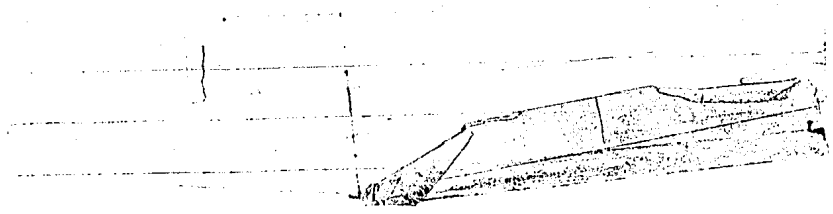
Runouts -
fair to good

[ITEMS(S) FOUND IN BOOK]

Mr Edwards

Hello I Have
called up ... any ... matter
regarded the matter and found
there was a small discrepancy
on the Photofloor II pads and
the sample and etc. He will
forward 3 Doz of the Photoflow
IL sticks. and we can return
the other ...

Yours



[ITEMS(S) FOUND IN BOOK]

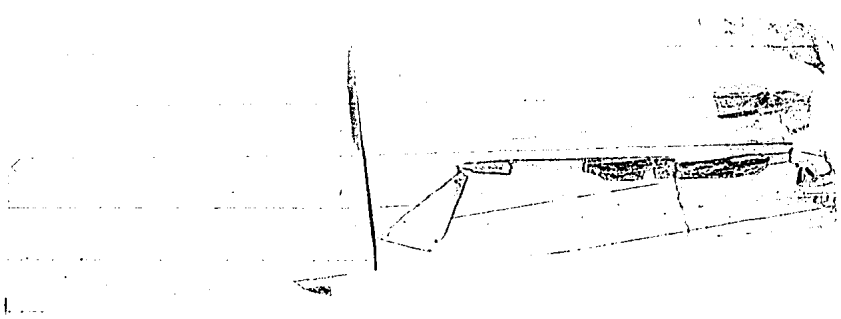
wood knife

10 grams Sandalo

5.5 grams Khaya ivorensis 2.0 mm

4.5 " " " " "

3 grams grenadilla



Notebook Series -- Notebooks by Edison,
Notebook, N-13-08-14.2

This notebook was used during the period August-October 1913. The entries are by Edison and an unidentified experimenter, possibly Sherwood T. (Sam) Moore. Included are notes pertaining to the printing and transfer processes involved in disc record manufacture and to the composition and preparation of record blanks. The entries at the beginning of the book describe problems experienced in record production and include Edison's proposal for a new "Inspection system for powder blank & Varnish Dept." The notes that follow pertain to experiments involving transfers made with experimental varnishes onto experimental record blanks. Edison's notes on the results of the transfers are accompanied by comments and observations regarding the progress of experimentation and also include instructions for Moore. Following these entries are notes by an unidentified employee [not selected] continuing the experiments on transfers. These entries, entitled "Ailsworth Exp.," run from August 29 to September 29 and describe work with the "213 powder blank" and various varnishes in an effort to improve the quality of the transfers. The entries by Edison at the end of the book describe a series of transfer experiments with variations in production schedules. These are continued in N-13-11-22. Edison's notes indicate that employees Jonas W. Aylsworth and Archie D. Hoffman assisted him in some instances. The front cover is labeled "Disc Record." The book contains 54 numbered pages, some of which are blank, followed by approximately 60 unnumbered pages.

Aug 14 1913

Trouble past 3 days in printing records — 50% Cracking on Edges

Transfers good,

Tried old transfers print 90% good.

The trouble is in Powder Blank or Varnish or both.

Glad helping me find bug

Veneer stripped from good print on old transfers, smeared all mucilage adhering fibre scraped off. Calipers from general average of veneer from all parts of stripped sheet Except Label

10	10|6	10.2	Average	
	16.2	16.2		
good	12.5	16,0	14.33	
Record	13,0	16.7		1000
	14.5	12	thick	

Average Calliper of Veneer from a bad record —

Bad Record

13.0
11.5
14.0
12.5
14.0
14.3
11.0
11.0
13.5
13.0

12.78 / 1000 -

Good Record 14.33
Bad Record 12.78
1.55

Nearly 002 thinner on bad
11% thicker on good —

We are now extracting the cream from a definite weight of powder blank both from good & bad cream after veneer stripped — to determine, if the proportion of cream to wood fibre is the same

We notice that the old transfer printed on wheat gave 90% good uncracked Edges — flows 1/32 more in diameter on printing than the new transfers we have trouble with the printing by 50% Cracking around Edges many of the cracks extending into the middle New blanks of transfers seem to be dry — don't flow just as if they were shy of cream or had a dry lot of cream —

4

Hereafter I propose to establish
an Inspection system for
powder blank & Varnish Dept
to check everything daily
These are proposed

1st Transfer plates — remove
hardened varnish from 3
plates & Cellophane sheets —

2 = Wear test 1st 1/4 inch of music
on 2 records daily 100 times.

3rd Check accuracy of thermometers
in oven baking powder blanks
instead one use permanently
side by side 2 thermometers
once they check — once a
week check by a standard
therm

4th Clean weighing scales once a week, check accuracy daily by weighing a set piece of nearly same weight on batches weighed regularly

5th - Each batch of Cream Room is to be tested & passed before use, have a proper supply ahead to give time for test, Test for Melting & Coming points, Viscosity & free Cream -

6th - 2 oz Samples Each batch of phenol Varnish sent to GE tested + approved by inspector before it can be used —
Varnish tested for 6/4 - Resin - Alcohol + Viscosity — Penta, other ingredients —

4 = Phenol Resin to GE tested just like Cresol Resin —

8 Wood fibre tested for fineness on screen — also dried 212° to constant weight —

9th = General sample of 7
Powder from 6 powder
blanks taken daily &
Exhausted to ascertain
amount of Cresol,
Blanks used must have
been baked,

10th = Powder blanks
Must pass the ring gauge

11th The graduations
of the following Machines
Must be all standardized
to same Vernier —

12th Amount of powder from old Blanks stated Every day—

Experiments on Mixing 18
powder - Varnish for Powder
Blanks -

Hoffman Numbers

598, Add 5 lbs of water
to the dry Wood, Pass lbs
mixes thoroly then puts
in Balloon of Cresol in
Cloakal dryers
& Dries Rag

599 - in 23 Cresol -
Mix Rag but dry it at
once in Vac Dries, dont
put in 6 in -

600 – Steam 115° start
117 highest
Lot 1 = 110 Low
521 Vacuum. Regs chedule

Transfer
Water 60 lbs
when cooking

OK - HHI HHI

Stuck hard II
" free

Plug out 1
Chip out 1

83%

600 don't flow as much as 601

Strainings

601 – ~~Stuck V Easy~~ 3½ to 1 521 Vacuum

No 2 Lot transfer bag flow out 225
110 Steam 65 lbs Cooking

Stuck – hard HH
" free II

OK HHI HHI I = 91% -

Chipped Edge 1

Transfer 602 Lot 1 –
521 Vac, Should edge of Steam
10 @ 110 lbs Steam Cooked 65 Lbs -

OK HHI II

Stuck Hard II
" free II

Chipped Edge HHII

Evidently less alcohol so not it
Don't print,

#600 Done Reg way Cut
instead of 4 to 1 use
3 to 1 ~~#~~ #225 WP YL

601 – Squeeze as #600
Cut 3½ to 1 225 – H½

602 4 to 1 using a solution
with 1/3 less alcohol, +
mixing this with ½ the
wood + they all other ½
of dry wood – 213 Cream

603 - Using Extra fine ground Cereal Rice - 213 - + mixing it dry with wood - 3 to 1 -

Not good - white spots of wood - also milled not enough surface poor mixing - Not much to go off this

604 = 213 Cereal. Use only 1/2 the usual amount of Cereal mix Reg 4 to 1

12 | 100 | 96 | 33 | 33

605 Lot No 2

Print.

OK III

Cracked IIIIIIIII

Correct

Must be mistake..

25%

605 - See Hoffman wheat Lot 1 = powder — Baked 1 Hour at 220 fahr Printed all OK 100%

12 blanks Transferred all OK

521 —

Transfers
12 of Burnt Tops
9 ok 1 2nd 521 Vac.
2 Discards —

45% 6 Stuck to plate
2 free release
2 Hand release

12 Burnt Tops Prints —

Transfers Req deliveries
12 of Thinist Blanks 213 blanks
521 Vac

OR ||||-|||| | Stuck off by hand
" free release
Big pull out Edge 1 " hand
Crack 1 " hand
" free hand
" free hand
" free hand

83% 7

14

Transfer
12 of the Unselected Blanks 521 V
213 -

OK IIII III

Chip edge IIII big — 1 Stuck plate, free release, hand
1/2 "

66% =

This Evidently shows that Very thick blanks tend to chip at Edges.

Transfers —

12 of Roughest Edges 521
213

OK - IIII.

Chip Edges IIII (3 slight, big) — Stuck to plate, hard.
Stuck to plate - Cant get off free release
Cant get off plate I — Stuck " "
Comed. chip - I — Stuck "
Cracked I — 4 slicks. 33%
probably over Baked

Everything points to Baking as Cause of our troubles,

---

605 ~~Re~~ transfers — 3rd Loaf,

OK 10
Cracked 1
Chip Edge 1.
83%

4 - Scuck
2 " Hand

Print of 605 3rd Loaf

OK IIII
Cracked IIIII

36% —

Transfer 16

605 Lot 4 Req Schedule

OK |||| |||| |

Stuck free release,
Stuck - hard,
Stuck free release
Stuck hard —
Stuck Very hard,
Stuck free release

Conch 1

Mistakes in number

91%

---

605 Prints = Lot 4 —

OK |||| |||| ||

Conch - fine cracks 1/32 to 1/8 from edges

100% Conch.

17

605 Lot 5 Transfer 521 V

OK HHT 1111

Stuck = hard –
Stuck = free
Stuck = hard.
Stuck = free
Stuck = free
Stuck = hard

Cancl.

Cracked 11

pull out 1

75%

Not going to print these % too low

Experiment – Took Reg Transfer 213 521 V Took 12 –

OK Eleven. 91% OK.

Chipped Edge 1 –

We now print these as % of print

Prints of above Expt, Reg Transfer

OK HHT III 66%

Cracked 1111

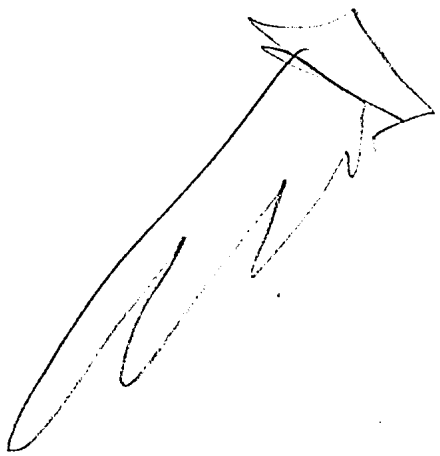
Reg curvature long axis around Edge

6th Lat Treatments
605 — Blackwood,
Recapitulated exit of water
Tube 15 mins —

OK HH HH

4 Steelhead
4 " Rainbow

Comal
Creek like a bird big 11
Over water pressure to 100 lbs —
83% good —



Note Cracked both sides alike & leaving to blank — not transfer

Transfer — 19

601 — Lot 1 — 521 Van
109 press — blanks not
burned — water pressure coolers
Cooling 65.86 — clean
under 107 86 —
OK 1111 111 —
Chipped Edges 111
Discard 1

Sheet hard 1111
free 111

Print 601 Lot 1 as above,
OK 111
Cracks 1111
Correct

This seems to prove that Cracking not due to Transfer —

Rattler —

601-Lot 2 Prints, see 601 Transcript for data —

OR II

Cracked IIII
Cracked both ends III } opposite Condition —

Rattler High MP sent upon approval or water mark —

Transferred — Hard pick prod & clerk, chick-head cull pairs

599 Blank Lot 1
Steam start 115 — stop 110
high 117 low 104 — Loader
undock — led LBs — 521 Yard
Marker word — returned — 213 —
flow commenced —

OR IIII IIII

Stockboard 1
" free. 11

Chopped 1

91%

Print Monday

No 600 - Print - Lot 1

OR IIII

Cracked IIII 33%

Cracked Bath Surface, III

Corner,

Resultant is that
With Special Schedule
on 521 aforesaid
Efficiency is 89.6%
Regular schedule 97.7%
With 384 Varnish
and Special schedule 70%
Regular Schedule 33%

Expts 12 Each Transfers run
reg schedule —
+ another schedule
7 min Contact
2 " Low
7 " High
9 " Clear
} 7 min schedule

We transfer 12 by new schedule
+ 12 by the other + recommend

Reg	100% 50%	
7 min	91% Print 100%	7 min for reference accurate
7 Reg	97 Print 37%	
7 min	75 88%	So far no new cracks on 7 min at 5.8 per cent lower
Reg	66	
7 min	91 Prints 91%	4 Easy 1 Hard
Regular	85% 22% Prints	Roller Lays Varnish 6 Easy 2 Hard
7 min	91% 91% Print	
Reg	85 90% Prints	all free of plates 3 Soft 3 Hard scratch
7 min	100%	

Now 384 Varnish Note

Reg	33%	checks, cracks, Very bad,
7 min (384 Varn)	66% 100%	Stuck 5 Easy 1 Hard
Reg	33% All but Print	3 Stuck, Easy
7 min	75% 100%	3 " Easy

With 548 Hardening no Pauses

COG are remaining satisfactorily
12 Transfer Reg Sched &
Special Schedule as previously
as described on page
before this —

548 Varnish 213 6 Pauses

Reg Schedule — 33⅓ Stick Temp 3 " Hard 4 —
Special Schedule 33⅓ Stick Temp 3 5 Very Hard
Reg Schedule 3 OK = No good stick plater Mfg all around

This varnish dont work

Will try transfer at Long Hardening Schedule, Edges sharp

& possibly this is due to Varnish not hardening Edges

7.9 6/4 — 3% Pens

Print 4 of them. 50% —
2 Crazy Edge

220 Powder Blank 607 Varnish
27 Discs 15 OK 2 Lifts 10 Discards
3 Chd 5 packed 2 Lifts — 2 Stuck to plate
55%

Prints 10 OK 2 [illegible] 2 Lifts —
85% —

---

220 Powder Blank 606 Varnish
Transfers made 28 —
4 OK 2 2nds 22 Discards
12 packed 7 Lift 3 cracked —
9 stuck to plate and discards —
14%

Prints 3 only all OK 100%
Thus Strange, 3 Comet 2 OK 1 Ng

---

220 Powder Blank 609 Varnish
28 transfers 14 OK 2 2nds
12 Discards 6 peel to Cracking
50%

Prints 7 good 5 Cracked —
58%

Very Strange
Thus to Regular Varnish
Except 1/4 more Penta
added —

354 Lacker

50% more Penetra
+ 16 ng —
This is Remarkable

Can't be that Lacker
Kind of Varnish requires
a different Schedule
as Brass looks like it

220 Powder Blanks Transfer 26
4 OK — 608 Varnish
3 2nds
19 Discards — 4 Old 7 Pooled & Lifted

Prints, 4 — all OK 100%

Special Schedule #0 610 Varnish
213 blank —

Some plates both alcohol
only tried 1/2 day — all
Checks + bad Synthetics
all Enamels NG Horrible ...
Para 519 = 6/4

Copied from page 22.

82.2

521 Vam. 213- 26

Special schedule 7 contract

Transfer	91%	Print	100%
"	91	"	91
"	91	"	91
	75	"	88
	Average 87%		92.5%

Reg Schedule

Transfer	75%	Print	37%
"	85%	"	22 "
	85%	"	90 "
	66%	"	
older series 1-100-82.2 av		"	50% 49.7 av

384 Vam 213 Blank

Special 7 Contract Schedule

Transfer	Print
66%	100%
75%	100%

Reg Schedule

Transfer	Print
33%	Off bad
33%	

Varnish 611 – 10% 5/4
Regular Schedule
1 OK 11 Chipped at Edges
the only defect,

Varn 611 – Special Schedule

None OK Pull outs 1
Chipped Edges 8
Cracked 3

---

213 – 415 Varnish
168 Transfers made only
33 Good –
Prints 25%

---

213 – 382 Varnish – 170 Transfers
23 OKs – 66%

No Penta –

384 — 213

2 Contact
1 Low
10 High
9 Coplan — } Dpd Schedule.

OK IIII I

Stuck easy
" Hard. I

Cracked I
Chiped Edge IIII 50%

---

384 213

10 Contact
1 Low
1 High
9 Coplan

10 mm Contact 1 on low 1 on high 9 Coplan

~~Ballcatch~~ NG

All stuck more or less — Some both pickers

OK I
Pull out II
Chipped Edges — IIII IIII

all plates showed impression around Edge - Scarcely any in middle —

One plate welded + Tore off surface of blank over area of 15 or 20 inches but Varnish stuck to plate —

611 Varnish 213 blank 29

4 mm — Contact
1 " Low
1 " High
9 Cool.

5 lbs Steam

All stuck between plates got several off — The Varnish did not transfer to blank, merely took the impression of the rough surface of blank This is strange as 611 is soft at very low heat Evidently heat much plasticity or Schedule not hot Enough plates didn't steam on pulling wet finger on —

Var 611 – 213

8 mm Contact
5 " Low
10 " High
10 " Coat.
} 100 lbs Each

OK None —

Cracked ////
Edge Chipped //// //

Too much para + no Penta
Kills 6/4 —

611 Var 213 Blanks

Transfer plates left in press 1/2 hour full steam heat, to cure them + harden — Most all blistered, but 8 were OK — These were transformed by the Special Schedule

N.G = Both plates stuck III Can't get off. Stuck - Stuck No confirmation & Query to sheet -

Rotten —

4 Para 6 & or 10%
6/4 to Resin — is ng
Large granules Para is ng —
521 has 2% probably Phenol & Formalin 1% + 4 Penta,

521 Transfer plates set on hot plates up pressure 100 lbs steam 1/2 hour They all puffed up + came off easy Loaded seem 6½ unload check again as 611 — but smut remove just the same —

Note.

If the overhang veneer is lifted up + chipped back towards end

Var 611- 213

3 Contact
1 Low
1 High
9 Cool

OKT
Chipped HHHHI
Stuck 1

NG

Note =

The proper point to Harden is on high & long time —

Contact 9 low don't do it as well —

213 — 384

Schedule —

3 Contact
2 Low
15 High —
9 Coal

OK |||| |||| All loose
Except 1. Very Loose

Cracked 1 —

Chipped Edge very small 1

Prints 12.

OK |||| ||
Cracked |||| 63%

83.3% good

This is the only set that all Inclusions Except two of plate & the only one to crack came off Easy

611 – 213

3 Central
2 Low
15° High.
9 Cool
OK-III

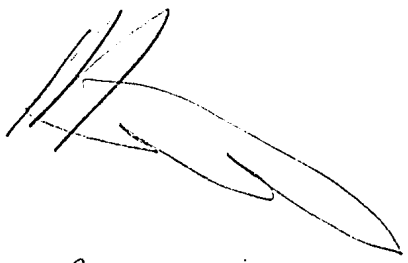
Slick-Envy HH I

Chipped Edges HH III
Cracked

27.5%

Note, frag from platter I

The shaw focus angle
Effect of 15° High in
Impeding an impossible
transfer –



Note

521 – 213

3 Contact
2 Low
15 High
9 Coop.

OK IIII III

Frac IIII
Stuck Hand 1
" Easy 1

Chipped Edges 11 66.6%

Crack 1 1

This schedule is not good for 521 – The Special Scale 7 mm Contact –
2 Low
7 High
9 Coop. is Good for 521

See 521 on another Card 590 page 36

Note, There is more
discrepancy for 590 than
213 on page 35

Sticks to plates less

521 on 590 Powder Blanks (Rosin)

3 Contact
2 Low
15 High
9 Cool

Moore can't say of blanks baked or not

OK |||| ||||

Free |||| |||||

Chip Edge small ||
"

Streak Easy ||
" Hard

83.3 good

37

521 Van 590 Run Blank

See page 36 —

Prints

OK HH IIII

Cracked 2 edge 11

81.8%

good clean Edges, no shine

Aug 22 38

384 Varnish — 213

Schedule —

3 min Contact
2 " Low
15 " High 800 lbs hydraulic

OK. |||| ||

Chipped Edge V |||| Free |||| Stuck Easy 1 " Didn't rounds ||

Repull outs 41% —
4 bursts

Only Trouble is V cracks at Edge & Other chip-out;

No Print

Aug 22/13

39

384 — 213

3 mm Conchoidal
2 " Low
15 " High - 600 lbs hydraulic

OK ||||

Chipped Edge |||

Cracked 1

No pull out or bend

No prints

Flake ||||
Struck off |||
" Hand |||

50% OK

Chips out ~~of~~ Flake Used in
No Reuse to Bend the Edge

Aug 22/13 40

Van 384 — 213 blanks

3 on Control
2 on Low
15 on High 500 lbs Hydraulic

OK IIII

Chipped Edge HHII
Cracked I

Free IIII
Stuck Sway IIII
" Hard
Plate not seperate I

No pull outs or bind

36% —

Dry all round chipped IIII
Wet + chipped when dry I

One chipped on edge where it was loose + chewed at end I
Just opposite chipped where stuck I

Aug 22/13 41

521 Van 213

3 men Conical

2 Long 800 lbs
15 High Hydraulic

OK |||| |||| Free |||| |||

Cracked 1
Chipped 11

No pullouts or bursts 75%

Dry all around 11
Dry where cracked Wet otherwise 11

Wet in one spot but OK ||||
Wet opposite sides but OK 1

Dry where cracked wet otherwise 1

12 (90 (75

22 Aug/13 42

521 V 213 6 Crank

3 mm Contact
2 Low
15 High

6000 Lb. Hydraulic

OK HHT II

Free IIII
Stuck Away IIII
" Hand II

Cracked III
Chipped II

No pull outs or bends

58.3%

12 (70 (58
60
100
198
40

Dry all recond OK HHT I
Dry where cracked wet in a Chip area I
Dry all recond cracked II
Dry all " Chipped II
Wet one place OK I

Aug 22/ 43

521 Var 213

3 min Cooked
2 " Low 500 lbs
15 " High

OK ||||/ ||

Chipped ||
Cracked |||

Free ||||/
Stuck Soft |||
" Hard |||

58.3%

No pull outs or binds.

Dry all around Butt OK ||||/ |
Wet in one spot OK |
Dry all around Chipped ||
Dry all around Cracked |||

Remarks

Tests on Transfers different hydraulic pressures.

384 – 213	800 lbs	41%	6 free
384 "	600	50%	4 "
384 "	500	36%	4 "

42.3%

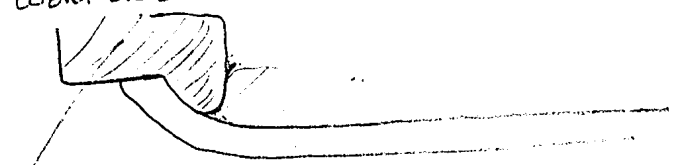
521 – 213	800	75%	8 free
521 – "	600	58.3%	5 free
521 "	500	58.3%	5 free

63.9

This shows as it always does the superiority of 521 – (1e) Para addition —

The whole of the trouble is at Edges the powder adheres to veneer, but condenses Contracts + tears off the blank. The Top Layer or outside layer of powder dont seem to adhere at low hydraulic pressures, the V chip probably clings to Edge of plate, + V is pulled off —

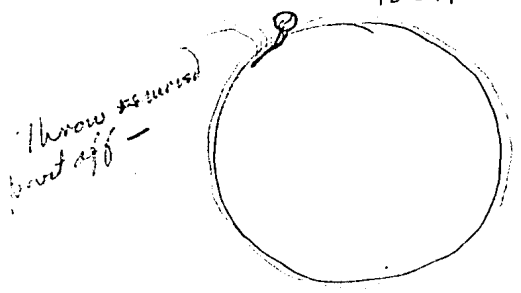
I think we would save a great many discards if a tool was run around Edge on a wiper to detach varnish from edge after varnish was dry or touched solid state & before went into oven



Tool to run around, removing some

Cant say how it would work in oven but think it would be OK
Dec 1. Marker Transfer was worked without an Edge,

Tool



With low pressures the chips out are due to the fibres of the blank not being interlocked enough, hence the veneer tears easily the outer surface of the blank away with 1000 lbs however the fibres of the blank are pressed together + interlocked better, in addition the blank gets thinner + the resin is compressed from a large bulk into a smaller bulk + more intimate contact with the fibres so that the veneer has greater difficulty of tearing off the outer surface of blank. The only benefit of heavy pressures is that it increases the difficulty of punching by not pulling out edges of unfilled there is liability of cracks starting in unfilled edges.

22 aug/13 47

521 — 213 1000 lbs

3 mm Contact

15 " Low

2 High —

OK. 𝍸 𝍸 1

Chipped 1

Free 111

Stuck easy 𝍸 11

" Hard 1

Platter not separated

91.6%

No 10 Press,

12 to bottom of Press.

No 12 OK
11 OK
10 OK-
9 OK
8 OK.
7 OK
6 OK
5 OK
4 OK
3 OK
2 chipped.
1 OK

Aug 22/13

521 — 213

3 Min Contact
15 " Low
2 High

800 lbs -
Hydraulic -

OK ||||
Chip crack |||

Free 11
Stuck firm |||
" Hard |||
Accident Separation 1

9 stuck
3 free.

50% -

12 - OK.
11 Top plate stuck. Chip crack
Bottom ||||| 10 bottom plate " OK
Top ||||-4 9 " "
8 Both plates stuck, both carry OK
7 free - Chipped.
6 OK free
5 Top plate stuck hard, chipped
4 Bottom plate Chipped
3 " " OK
2 Top plate, Chipped
1 Bottom plate.

Aug 22/13 49

521 — 213 — 600 Lbs Hydraulic

3 mm Contact
15 " Low
2 " Hyfi.

No 10 press

OK III 25%

Couldn't get off 1
Chipped — IIII

Free 1
Stuck Easy III
" Hard 1
Couldn't get off III

Top IIIIIII 12 Both stuck
11 Couldn't get off bottom
Bottom IIIIII 10 free. OK
9 bottom — OK
8 Top stuck, chipped
7 bottom chipped
6 both stuck
5 Top — OK —
4 Both plates — bottom easy chipped
3 Top, stuck
2 bottom
1 Top — chipped

7 Top
7 Bottom
Stuck

Dontocam 6 easy deformed

Note our machine for getting off busted, had

Phenomenon on Chin

Cracked in central area
Blow outs nothing to hold
Veneer while in Contact,

Aug 22/13 50

521 V 213 -

15 Min Contact
3 " Low
2 High 1000 Lbs

Aug press

OK III

Cracked, II
New blow out middle spot + near edge. III
Chipped Edge I

Fine II
Stuck Soft IIIII
" Hard
not taken off I

27% —

Aug 22/13 — 51

521 — 220 blank —

Reg new schedule
7' Control 7 Height —

Reg work —

OK HH HH I 91.3%
Pull up 1

2nd Lot

OK HH HH I
Left up 1 91.3 85.9%

3rd Lot

OK HH IIII

Chipped Edge II 75%
Cracked 1 same

4th Lot.

OK HH only 6 taken
Chipped 1 83.3

5th Lot

OK HH IIII
pull up 1 90%

These three we can use 220 blanks on regular work with the new schedule These were taken from a regular Iron Working Reg Transfer —

91.3
91.3
83.3
90
91.3
91.3
91.6
94.7
85.9

12/90 (74 84 6)

6/50 83.3

10/90

Aug 22./13 52

521. 213

3 Min Contact
15 " Low
2 High 1200 lbs

OK |||| |||| .|

Chipped Edge 1

Free
Stuck Easy ||
" Hard
by hand 1

91.3%

2nd Round Same schedule
1200 lbs.

OK |||| |||

Chipped (from blow out) ||

Stuck easy ||
" Hard 1

83.3.

Prints. 1200 lbs — 100%
OK |||| |||| 1

Square filled ||||
Not quite a full at Edge. Count OK ||||
" " " minute but OK 1

9 pcs
521 213- 1000 lbs

3 Men Counted
15 " Low
2 " High -

OK |||| |||| Free ||||
Stuck easy |||
" Hard |

Blow out Edge Cracked ||
would be a chip out if
pulled at Edge

83.3

2nd Round Same as above

OK |||| |||| | Free ||||
Stuck easy. |||
" Hard.

Blow up crack at Edge |

91.3%

Points from above
OK- |||| |||| ||

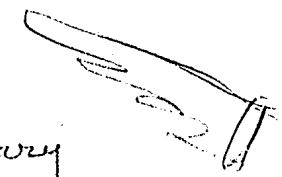
100%

Sharp Corners ||||||
Corners slightly rounded ||

Moore

Also see page 52, shows that printing is OK for transfer marks by Curling Condemn to blank on how or long light + that even 1200 lbs is ok. but 1000 better because 1200 hardens blank so edge on comm prints don't come up sharp. See page 52 mother page 53. on prints not short comm
Any pressures less than 1000 is bad. Note pages 47 48 + 49

Moore



You can safely vary the Schedule by Taking Time off of Either the Contact time or high time + adding it to Low

Reg 7 Contact schedule
213 blank 521.

Difference is use of 213 instead 220 as against 220 page 51 —

OK. |||| |||| Free |||| |||
Strike Easy ||

Chipped Edge 1.

Brake edge of 1 Not counted.

90.9 %

Moore

From all the Experiments it looks as if long at Contact is Good, that long on Low or high is good, That long on Low is best place to hardden the Condemnite. Thus is time of 220 or 213 blank
Hence best Schedule with 521 would probably be
3 in Contact
12 on Low
1 on high —
Sorg Coal.
} to be tested

9-17-13

#213 Pamela Blanton

#538 (Vaccine (Lot 1444) started 9/13

No. of Legs for plates 121

" " Eyes read 12

" " Spl - 10

" " Sec - 0

" " Tri - 2 (1 second read)

" Works prog good - good surface

2 Stuck to palate - Lightly

Special (25-Min) schedule used

Tri - 83+?

Pamela ?

Transfer

Vaccine Little, Edmond OK

#669	- 1491	#213	12	2.50
#670	- 1492	#213	60	2.50
#671	- 1493	#213	12	2.50

#669 5-15

#670 1-10

#671 3+?

Totals

#669	- 54	37	17	68.5
#670	- 60	36	24	60.
#671	- 42	27	15	64.2

Special Experiment - Lowering pressure to 300 lbs + then Coop
Regular Varmint + Rec
Schedule - 632 Varmint
Lot # 1486 - 213 Powder Charge
360 grns — 5 Shot to plate
Oct 2/13 =

20 ok
3 chipped at Edges
1 Big Burn -

84 %

Thus apparently shows that if tried on large scale this Charge might be advantageous
Can't determine on such a small Lot Note Groups seem to be 2 Edges -

Oct 3/13

Bombs #213
Weight 390 gr. after trimming
.260 - .271

V	V
.270	.260
.258	.262
.272	.265
.255	.271
.273	.264

We cannot use a shell that weighs 390 gr. it is too thick

Ring varies in thickness from .200 to .250

Duplicate of NO 1
OK III 50%
Birds III

Print OK II
Hig. Crack + Bird at Edge IIII 35% —

Long Schedule is
16 min Cooking

Regular Schedule
8 min

NO 1 schedule is
10 min

NO 2 Schedule is
11 min

NO 1 has 1/8 from Edge red row of Breaks + Eggshell pressed not filled in mixture -
2 = Red row breaks 1/2" in -
3 Bird in mixture
5 Red row of breaks -

Experiment on Transfer
with modifications of the
Short Schedule

Reg short Schedule is
2 Contact 1 low 5 High
800 Lbs —

Variation of short Schedule
NO 1 = 3 Min Cook 4 min 800
Lbs = Coef,

6 Transferred 5 OK
1 Bird inch in
from edge 1/8 bird - veneer chipped out
not Burnt to Crank 83%

Print. OK IIII Crax
One of OK had
100%

test for 15 birds only

Variation short-schedule
No 2

3 Men Contact
1 Low
7 High — Coal —
6 Transfers

OK ||||

Bird 1

Bird in one of the OKs threw over 2 Circles
½ from hole in center & struck very
tight to plate,

83½

Printed -
OK HH1

Mary Moore

100% —

No 3 Short schedule.

2 Contract.
7 High 800 LGs

6 Transferring

OKs 3.
Birds 3.

1 Blank has 2 bands 1/2" from back on Face a series of fine circles on margin on other side

2 Blanks have 2 bands 1/2" from Margin another 1" from Margin
Other side OK

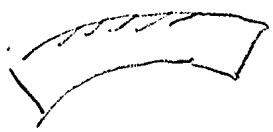
3 Blanks have band one side 2" from Edge another 1" from Circles Face
Other side OK.

50%

Print.

OK III

Cracks Edge 1
Bird 1



11

all flecked on Centers

60%

4th Short Schedule

2 mm Contact
6 " High 800 C Co
Co C —

6 Transfers —

OK 3.

Birds 3 - 2 has skinny of Gerbera
1/4 @ 3/16 from edge one side only
one sided only - also has bends in
[illegible] also [illegible]

dedint shows plate
Contact ~~Co~~
Mallard Lake on
Cooked Limousin -
Egg shell.

50%

No 5 Schedule -

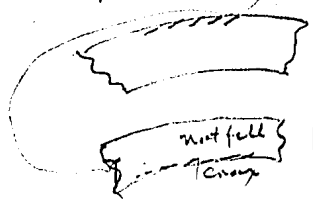
4 min Contact.
6 " Hugh 800
6 free releases

OK 4
2 Bursts 1 hose 2 Bursts in
Release 1 rose of Head Breaks 1/4"
of Edge

66%

Prints — 5 —

OK IIII
No Cured by- 66%



1

1 No Red in Could

No 6 Schedule -

5 minutes Contact
5 " High 800

5 free releases 1 stuck
Red Centers

OK 5-
1 Bind + bad seed Centers

83⅓

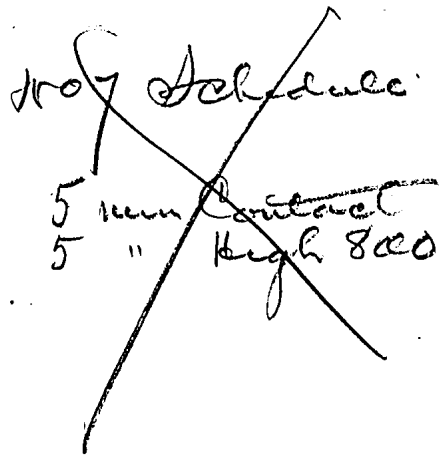
Fruits 5

OK 1 25%

Bad centers III Red didn't print full near Label - III

Crap near Label Red

Red Centers don't fill


Hog Schedule
5 mm Contact
5 " High 800

No 7

6 number Contact
4 " High 800

all free release

QR11
Bund 1111

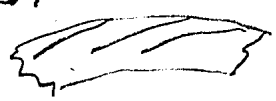
Very Red +
bud Center
warped yet,
on bund

1 has some red breaks 1/4" Edge

35%

Prints 2 =

Didut fill Edge 1 00%
Crack 1



No 8

Mini Contract

3" High 400

Transfer 4 free release 2 stuck

OK 11

Bind 1111

Binds back side 11

1 ole has bad read eggshell big on label.

35%

Prints 3—

OK 00%

Cracked Edge 11 } 3

Not filled Edge 1

No 9

8 Mini Contact
2 " 8000 High -
5 free released 1 Stuck -

OR IIII

Birds, II ½ row red

Red Centers, large, irregular, + Eggshell -

66%

10 Schedules

9 Minutes Contact

1 Minute High gas Ch

5 free radicals 1 stuck

OK II - Doubtful

Burden, HH

Very large seed Centers,

+ ~~all~~ 2nd +.

16.5 a/o

Pending

OK II not connec - 00%

Edge Cracks 1 -

Red not filled in Center connection II

258- Reg Cresent Powder Machine
Packed — about 1 cubic yd — 800 lbs
2 1 qt 5 min — 2 stuck 4 free
Transfer

OK IIII 100% -

Printing -

OK. III

Cracks Edge. 1

83%

Listened to 3

1- Loud outside feller mid good marks NO RD
2 " " RO
1 " " RO
2 " " RO
1- [illegible] good - good - no RD
2 Loud — Big RD

WG for surfaces

No 11

2 Contact,
8 High — 800 Lbs

OK IIII

Binds II

Edge 3/8 in rough sized Cards - 1
Binding musical

66% —

Printing 5 =

60%

OK III
Cracks Edge II

No 12 Schedule

2 Contract

10 Hugh 800 lbs —

OK. IIII

100

No Red Centers on Transfer

Prints 6 —

OK. II

Cracked Edges Gad IIII

33⅓

Proof 3 =

OK III 100%

14 Schedule. — 100 counted

800 High

10 minutes — 6 free selections

OK. III

50/0

Small Bird 1

Birds 11

Blank edge ⊏ crushed 3 of them

Birds in deep depressions —

There depressions have something to do with birds —

The records have only four
Surface 1 found - 2 found RO
1 RO — Not good — yet
surprising

Test for surface

Note for
No 33 for
Print-
OK III 100%

Most surprising

Special Expt-

Contact 7 min — No pressure
Except the 100 lb.
Heated ± when cooled
no pressure —
all free release

Surprising — Half the area
is transferred OK —
inside or center very red +
Cracked up no pressure

OK III of course they are
all cracked up but no other
defect we will permit —

This shows that 100 lbs
pressure would transfer
if blank + Veneer +
platen were perfectly
flat + true —

S S

Which transfer is good test for surface —

$$12 \overline{)50} \; 4\,\text{R}\,2$$

Notebook Series -- Notebooks by Edison
Notebook, N-13-08-25.2

This notebook was used by Edison and Peter C. Christensen during the period August 1913-May 1914 for a sequence of numbered "tracking tests," which are continued in N-14-06-09. These tests involved evaluating the hardness, surface tension, and other characteristics of experimental preparations of wax compounds and metallic soaps, probably in an effort to improve the quality of the "white master" records onto which recordings were made. The masters formed the base for subsequent molds used in the disc record production process. Intermixed with the tracking tests are entries by Christensen alone [not selected] relating to tests of the viscosity and purity of rosin, varnish, graphite, and various waxes used in the manufacture of phonograph records. Related wax experiments by Christensen, with comments by Edison, can be found in N-12-04-19, Notebooks by Other Experimenters—Miscellaneous Experiments. The spine is labeled "Testings #1." The book contains 197 numbered pages and has been used to page 196.

Tracking Test #1

#2 - 10 gr of Candellila 4 gr Blended Montan Wax
Too little wax tracks to knife edge

#14 - 10 gr of Candellila 2 gr of Paraffine 140°
Too hard can't track to knife edge & chips

#15 - 10 gr of Candellila 1½ gr of Paraffine 140°
Nearly tracks to knife edge and then chips too hard & brittle

#17 - 10 gr Candellila 1½ gr Paraffine 140
Tracks to knife edge very slang chatter marks more than 3 times larger than Reg wax

#18 - 10 gr Candellila 2 gr Paraffine 140°
Can get to knife edge & beyond considerable chatter marks 3 times wider but no length. looks good

Tracking Test #2

#19 - 10 gr of Candellila 2½ gr Paraffin 140°
Can cut nearly to knife edge. chatter marks 3 times as wide but well defined

#25 - 10 gr of Candellila 2 gr ceresin
Can't get to knife edge Chatter nearly as fine as Reg

#26 - 10 gr of Candellila 1½ gr ceresin
X Can go to knife edge some margin on this chatter well defined twice as big as Reg

#26 - Duplicate of above
Can just go to knife edge no margin Chatter twice as big & rather well defined

#49 - 10 gr of Candellila 10 gr Spermaceti
Can just go to knife edge no margin large very confused chatter marks - ball looking cylinder bad mix

Tracking Test | #3

#69 – 10 g Candidilla 2 g Myrtil wax
Cant get to Knife Edge – Poor

#70 – 10 g Candidilla 5 g Myrtil wax
Cant get to Knife edge Chatter Tooth as big as Reg. 1

#73 – 10 g Candidilla 15 g Myrtil wax
Can get to Knife edge 2 some margin
X Chatter 2 to 3 times & wide diffuse
Bad mould mix

#78 – 10 g Candidilla 45 g Myrtil wax
Can get to Knife edge after mixed
3-5 Margin Chatter 2 to 2½ times
Edges not very clearly defined Wax
mottled

#80 – 10 g Candidilla 3 g Stearic Acid
Cant go to Knife edge or near it
Poor

Tracking Test | #4

#81 10 g Candidilla 5 g Stearic Acid
Cant get to Knife edge – Chatter Teeth
as big as Reg. 12 all defined

#82 10 g Candidilla 10 g Stearic Acid
Can get to Knife edge 2 some
margin Teeth 2 to 3 times larger
Chatter 2 very badly defined
Mix seems not Homogenious

#91 – 10 g Candidilla 3 g Stearic Acid
Wax Cant go near Knife edge
Chalk values as Reg Sharp

#96 10 g of Candidilla 1 g Hydrocarbon
Cant go to Knife edge Chatter same
as Reg but all defined

#98 10 g Candidilla 5 g Hydrocarbon
Wax – Chips or Dags No good
Can't go near Knife edge

CONT 54

Myrtle's Blend Montan Stearic acid 1 | 30

#	Grm	Nan	
281	10g	3	NG. Vaseline (see below) but to ½ gr of this added 1 gr of Candelilla #91-Lotte- sol in above
282	10	3	NG Ceresin) but to 5-½ gr of this added 1 gr of #284
283	10	3	(NG) Paraffin 100 + 3 Wax pure Bees wax but to 160 gr of this mix add 3 gr Vaseline and 15 gr of Blue wax - (Lyons)
284	10	3	X/10 part of this add 6 gr Ceresin 3 par Alum 1 part 6 gr #91 Candelilla 2 Otte
285	10	3	1/10 part [illegible] Ceresin
285	see page 64		
286	10	3	1/10 part [illegible] 3 parts Bay Rum

#281- after the third addition were not good yet 2 added 3 of Chinese India ink was 3 of pure Montan wax mixed by Lotte - (insol in alcohol) to 6 gr of 281 having the last addition in it

CON- PAGE 63

Tracking Test | 5

#110- 10 gr Candelilla 2 g pure Bees wax Bayer Co. Cant go to knife edge alone cement thing by same keep Matter made by Reg.

#111- 10 g Candelilla 3 gr pure Beeswax by Otte go beyond knife edge some 2 thick edge Chip - (Chatter from 2½ under - wants like beeswax with the troubling ingredients got out of Bees wax then would be premium fair smoot surface Tracking when not too deep is shining. not Much electric

#112- 10 g Candelilla 10 g Beeswax NG Very shining deep in 2 marks, big music term.

#116- 10 g + (10 g Candelilla + 20 g Paraffin) Sue 1 g for Lead Stearate Can go to knife edge But has horrors with homogeneous Smooth surface not defined Chatter.

56

Tracking Test | 6

#119 - 10g of (10g Candelilla 20g Paraffine) 9 min
1g of (Zinc stearate)
Oil Defined Clarity marks can just go to knife edge very bad on shaving off shows bad surface Digs

#128 - 10g Mix as in #119 + ½g Al Stearate
Not Electric fairly shiny Grooves not sticky
X can go beyond Knife edge Oil defined Clarity twice as large - somewhat promising

#129 - 10g of (10 Candelilla ½g Ceresin) 9 min
1g of Lead - Stearate
Clarity mks rather even - twice as coarse than Reg can go to knife edge easy beyond dont clip out at all no matter how deep
X when very deep edge breaks white good smooth fine grain (whole track looks what may be something in this

Promising

Tracking Test | #7

#132 - 10g - (same Mix as 129) 1g Zinc Stearate
Dull - pretty good surface feel sticky
X can go beyond knife edge imperfect but when deep edge clips Clarity marks fairly even twice as wide as Reg looks good not much Electrical Very Promising

#140 "A" 10g - (same Mix as 129) 2g Bees wax
Not at all Dec - continues clip when very deep - somewhat sticky Clarity mks about
X same as Reg at same depth can go almost any depth surface rather fine & mix fairly homogenious - mks mks even

Exceedingly Promising

#140 B 10g (same mix as 129) 3g Wax
Not Promising

#141 10g (10 Candelilla 10g Myrtle wax) 9 min
1g Lead stearate — N.G.
Horrible Electrical Can't get beyond

Tracking Test #8

#144 - 10g (10 Candelilla + 1⅝ Myrtle) 1g zinc stearate
Dull surface, no tracking, not promising

#147 - 10g (10 Candelilla 10 Myrtle) 1g Mg Stearate
Chatter like dull, not promising

#150 10g (10 Candelilla 1⅝ Myrtle) 1g Al Stearate
Chatter marks all kinds of lines go 4 times
larger, can go to knife edge, not fine, breaks
at edge, but can go very deep, all the
white choppy edge - can't say it's electric

#153 - 10g (10 Candelilla 1⅝ Myrtle) 2g Ferric White
sticky - Dull - not very elec - lines go to
knife edge then edge chips
Not promising

#154 - 10g (10 Candelilla 1⅝ Myrtle) ½g White Protean
Fairly shiny tracking don't appear elec good smart
surface fine grain chatter like not well defined two
edge reg. lines & wavy music waves can go beyond
knife & stroke goes deeper than any so far
without breaking knife edge - not sticky
Very Promising

#156 - 10g (10 Candelilla 1⅝ Myrtle wax) 2g Stearic acid
Can go beyond knife - with sticky - Chatter
like Reg at considerable depth white edge
not elec - Fair

#157 - same as 156 - using ½g Stearic
not good wide petty chatter like
can go just to knife edge not good

#158 - same as 156 - using 10g Stearic
go to knife edge not much beyond
chatter like defined smooth surface
coarse choppy not elec - fairly shiny grey
white ridge after knife - not promising

#159 - 10g Candelilla 1⅝ Myrtle wax) 2g Cerasin
Not sticky - dull surface - with moderate tracking
Chatter not much more than reg. Tracking

Tracking Test #9

Tracking Test #10

smooth (white about lucca as 60 fairly reg - very little white on Edge both Sides Knife not a shiny good smooth burnish but is dirty - fairly shiny Groove but Thin - continuous chips. Very Promising

#160 same as #159 using 5g - Cerevin fairly shiny Cut - shape is not fine - goes little beyond Knife Chatter somewhat ill defined 3 turns as per Rec. White on Edge when just beyond Knife

#161 - same as #159 using 10g Cerevin Carico almost any dist edges way beyond X Knife are sharp not White very little Elec - fairly shiny grooves don't seem to be shiny Chatter smooth - surface fair but this very unhomogeneous

VERY PROMISING

Tracking Test #11

#162 - 10g (10 Candelilla No 3 Imperial) 2g Tetrachloromethane Not good

#163 - same as #162 using 5g tetra can go a little beyond Knife poor mix seems to segregate Dent appears Elec continuous chips when deep Chatter ill defined and Turn as #159

#165 - 10g (10 Candelilla No 3 Imperial) 2g paraffin X Matted bad - Can go beyond Edg seems it clings Little even but 3 turns as usual Tracking semi shiny little if any Elec

Only Hair

#166 same as #165 using 5g Para Matted shiny tracking Can't go X beyond Knife a very deep track Edge chips Chatter even not smooth Elec

Promising

Tracking Test | #12

#167- same as #166 using 10g Campin Not very homogeneous Mix fair smooth cut [illegible] deep cut X Inside very little evidence of Chatter both ill defined 3 Tongues Contentious cusp Promising

#168-A- poor surface not promising

#171- 10g (10 Cannibella 15 Myrtle) 2g [illegible] goes beyond Knife Chatter 1½ mm Ray Mix fairly lumpy- Poor ball cavity Cut- tendency of shavings Knife to Chip a Little Promising

#172- Bad Mix can go to Knife same Mix as #171 using 10g Spermaceti

Tracking Test | #13

#175- 10g of Mix. —
(8 Cannibella 9 Myrtle - 1 Hexanoic Acid & China wax Inbeat) + 2g of White Mineral Just go to Knife - not promising

#178- 10g of Mix same as #175- + 2g Stearic Acid - Chips in turning poor surface can go just beyond Knife Tendency Chatter tends to 1½ = Not prom.

#179- 10g of Mix same as #175- + 5g of Stearic Acid - Just go to Knife, Chatter tended Ray Mix Cut fair bad worn surface Not promising

#181- 10g of Mix same as #175 — + 2g of Ceresin - Mix bad. Just go to Knife not promising

#182- same as 181 using 5g ceresin Only rush Knife N.G.B Cont-GJ

Tracking Test | #14

#184 - Mix - 8 Candilla + 7 gr. Al
Steam [illegible] 18 Strokes to wax
Paper [illegible] #2 of Paraffin - Wax not
homogen. goes just to Knife edge
apparently not Elec. Chatter twice as
Rig and pitted - Not promising

#186 Mix same as #184 - 10 gr. + 10
of Paraffin - Not Homogen. surface not
good. Chatter 1½ @ 2 sizes Rig just go-
to a little beyond Knife-edge apparently not
Elect

#188 - Mix same as #184 - 10 gr. + ½ gr
of Tetrachloronaphthalene - Mix not good
separate - but fair surface - Can go
beyond Knife edge considerable
Chatter twice sizes - full of depressions
due to soft & hard Segregations - not
apparently Electrical

Tracking Test | #15

#189 - 10 gr Candilla + 1 gr of Lead Stearate
Steam [illegible] minutes Can go to
Knife edge Rough Mix

#190 - 10 gr Candilla + 5 gr Lead Stearate
Very [illegible] Can't go more than ¾ way
without a Chipping -

#191 - 10 Candilla + 1 gr Zinc Stearate
NC Can't Track ½ without
chipping - Chipped on turning

#193 10 Candilla + ½ gr Alum. Stearate
Rough brittle Mix Can't go to Knife
Edge Chatter not quite so pronounced as Rig

#194 - 10 Candilla + 1 gr Alum. Stearate
Rough Surface Chatter mark twice
signal Rig Can't go to Knife edge

Tracking Test #16

#195- 10 Candelilla + 2g Carnauba
Too hard - can't go to Knife Edge
surface not fine grain - not promising

#197- 10 Candelilla + 10 Ceresin
Best good surface can't go as deep
as Reg - not promising

#201- 10 Candelilla + 30 - Ceresin
Chatter larger than Reg - can't go quite
as deep as Reg surface glove-feel
edge holds bristle Contends clubs
not elect. - surface uneven - Conductor
- that may be grounds

#216- 10g Candelilla 1g Wax Schw
Too brittle & hard - track as deep as Reg
good surface

#233- 10g Candelilla + 1g Vegetable Wax
Too hard & brittle, can't go near Knife
edge Electrical

Tracking Test #17

#246- 10 Candelilla + 20 Bayberry Wax
Poor surface - finger - N.G -

#257- 10g (10 Candelilla - N Myrtle) + 1g
Bayberry wax - not elect - Contenders
Chips skate about like Reg - surface
not near as fine grain

#256- 10g (10 Candelilla + N Myrtle) + 2g
Japan Wax purified by Lloyd - Electrical test go to - Chips edge
surface not quite so good as Reg
Chatter a little large -

#260- (Min v = 140 ÷ - 6.66 Candelilla 3.33 Carnauba
2g of Bees wax purified By L. Otis
Contenders Chips very soft not elec
dul Chatter twice Reg can go very close
and still give contenders chips surface
fair - maybe useful for something
(10g of Mix + 1/2 g Vaseline)

Tracking Test #18

#263 - (Mix of #140-A - 666 Candelilla 333 of Ceresin 2g Beeswax) 10g of this to ½g Carnauba wax

Little stiffer - not thin continuous chip best for stiff Chatter, twice Reg surface shiny not smooth can go much thin Reg Dots not homogeneous dots not developed or rather shiny fine grained surface not so good as Reg if can get dots out be good Very Promising

#264 - same as #263 - using 5g of Carnauba - no deeper than Reg Mix reasonable NG

#270 - (Mix of #140-A-666 Candelilla 333 Ceresin - 2g Beeswax) 10g of this to 1g Black White Montan Chatter marks not much more than Reg It goes deeper than Reg - over

Tracking Test # 17

Ridge skim grooves general appearance not dull looking - can go tried Knife edge a little thin crack edge - this mix is not homogeneous smooth dont mix surface not as fine grain as Reg - Tryit 170° F about same not this. Very Promising

#272 - (Mix of 140-A - 666 Candelilla 333 of Ceresin 2g Beeswax 10g of this to ½g of 1 part Vaseline to 3 parts of Aluminum Stearate - Soft dull surface can go very deep ball polished Chatter twisted rig continuous chip at any depth not practical It works good Considering the great softness of this material I may be very useful some day

Tracking Test | #20

#287- (Mix of #140-A - 6.66 Candelilla 3.33 Cerasin 2g of [illegible] 10g of this to ½ g Paraffine Coated Fine Lycopodium - Electrical [illegible] Rather soft Useful for something where good adhesion and deep tracking wanted

#279- (Mix of #140-A - 6.66 Candelilla 3.33 Cerasin 2g Beeswax - to 10g of this 10g of Mystic Wax - Not Elec. Rather soft Very good surface little soft Readily cut track deeper than Reg Clutter about same Rattler Drill surface - this is [illegible] for hot wax sticky should be got down

#280 - same as #279 - using 2g Myristic Not Elec Rather sticky can do deeper than Reg Clutter Litter more than Reg - dulled

Tracking Test | #21

Rather soft - continuous drip at any depth, surface not quite so good as Reg primarily for soft work

#288- Dup of #140A - using pure Candelilla insoluble in alcohol 10g Mix (10g Candelilla ½g of Cerasin) 2g Beeswax Mix settles out in 2 parts N.G.

#289 Dup of #137- using pure Candelilla insol in Alcohol 10g Mix (10 Candelilla 1½ Myristic) ½g Beeswax Continuous drip not quite so little beyond 1 knife Very good surface not quite as good as Reg but fine appears homogeneous Chalk Litter more than Reg 3 times softer than Reg

290 Dup of #137- 10g Mix (10 Candelilla pure insol in alc + 1½ Myristic) 2 cerasin Mix settles out N.G.

Tracking Test #22

#291- Dup of #161- 10g Mix (10 Candelilla pure sol in alcohol + 1½g Myrtle) 10 Ceresin- Continuous Chip- only No Knife edge surface poor (Not Electrical Melt soft)

#292- Dup of #132- using pure Candelilla sol in Alcohol & Rosin extracted 10g Mix (10 Candelilla + 1½ Carbon) 1 gm of Zinc Stearate- Not Elec Chip soft but fairly shiny Less wax obtained Chatter Cohesion go deep (as Reg) Mix adhesion out not performing

#293 Dup #140-H 10g Mix (10 Candelilla pure sol in Alcohol Rosin extracted + 5 Ceresin) 2g Bees wax — Not Elec Touch shiny surface Chatter big when deep goes about Dep as Reg very fine grain surface but its wavy short sort irregularities about 2mm Promising if can get thin surface coat

Tracking Test #23

This for Expt. 74

#294- Dup #134- 10g Mix (10 Candelilla pure Sol in Alc. Rosin Extracted- 1½g Myrtle wax) 1½g White Beeswax Montan (Not Elec. Chip go little deeper than Reg- semi rough or Rather Terrough- No Marked Chatter just irregularities only on or far Chip Elec Fine Granularity perhaps if mix ever would be no Chatter marks surface rather bright- Color yellow white Very Promising!

#295- Dup #134- 10g Mix (10 Candelilla pure sol in Rosin extracted + 1½g Myrtle wax) 2g Ceresin — Not Elec. Chip Chip go little deeper than Reg Chatter very small even when the Knife but appears as very small pieces either the cut or Knife rode over good surface Very Fine Grain but undetectable there is no irregularities or impurity that guides it Very Promising

75

Tracking Test #94

#394 - Dup #161 - [illegible]
(10g Candelilla paste rub on Alcohol
Ribbon incorporated + 15g Myrtle wax)
+ 10g Ceresin - Not Test. Capt Chipps.
X Abattis better More than Reg tough
shiny surface fine grain fast some
warp Cango shade lighter than Reg
Looks promising if warp can be got
away with

76

Cont. P. 119

Condensed Tracking Remarks #1

1-8	10 Candelilla 20 Paraffin 140°	Looks good
26	10 " 5 Ceresin	Chatter will continue
72	10 " 15 Myrtle wax	" " "
138	10g (10 Cand - 20 paraffine) ½ Distearate	Somewhat Promising
139	10g (Cand - 5 Ceresin) ½ Pb stearate	something in this promising
139½	10g - (10 Cand - 5 Ceresin) ½ Zn stearate	Very Promising
140½	10g - (10 Cand - 5 Ceresin) 2g Bees wax	Exceedingly Promising
154	10g (10 Cand - 15 Myrtle) 5 W Montan	Very Promising
156	" " " 2 Stearic A.	fair
159	" " " 2 Ceresin	Very Promising
161	" " " 10 "	VERY PROMISING
165	" " " 2 Paraffin	only fair
166	" " " 5 "	promising
167	" " " 10 "	Promising
171	" " " 2 Spermac	a little promising
369	10g (10 Cand - 5 Ceresin) ½ Carnauba ½ Bees wax	Very Promising
370	10 " 1 W Montan	Very Promising
389	10 (Pure sol in alc 10 - Cand - 15 Myrtle) 5 "	Very Promising
393	10 (Pure sol in alc F.R.) 2 Bees wax	Promising - can get away slightly
394	10 (Pure sol in alc F.R. 10 Cand 15 Myrtle) 5 W Montan	VERY PROMISING
395	10 " 2 Ceresin	Very Promising
396	10 " 10 "	Looks promising if warp can be got away with

Tracking Test 25

Con. from pg 76

#300 – 80 White Aluminum } Coarse grit
30 Corundum } on Tg 170g

2 coats 30g of Tin Starch

Very fine grain surface. Chatter worse
Under Req – not so soon goes to Knife
Edge & heavy beyond – Chips
Cling around Flake Req – dry
practically Electrical, & hard –

Thus to be any Value meant to be
defined as nearest Req of
any standard

It has White Checks
in mat of surface 1/2 to 1"
apart.

Tracking Test 26

30/ 60 White Aluminum
40 Corundum

Matted – Can go to Knife &
beyond. Edge of work
Chips out, No chatter marks
just unhomogeneous roughness –
Sky have seen vertical
Chatter Marks.

Pronouncing of Cords to be
Yet Unpronounced –
Its some what Elec
as beyond Knife Chips
Check but not up to
Knife Edge – Pure white

Tracking Test | 27

#30? 50 White Mountain
50 Canada

Mulled—
Very bad - rough -
Unhomogenous - Segregates
Very little Zoe

Tracking Test | 28

90 White Mountain } badly fractured
10 Steam, Dark } to 170 g of the
2 adult 20 g Fa Steam

Mulled one end other end
OK - Quite Elastic

Perfect Surface —
Can go to Knife + Beyond
Thumb at Too hard
Chilled Lake Reg

Processing

Tracking Test 29

80 g White Montan
20 Stearic Acid F - to 170
added 20 g Wax Stearate
Melted, very unhomogeneous - not good goes to knife Chatter ill defined a little Electrical fine pieces Cant blow off - Not good

#308 80 White Montan F to 17
20 P.W. Bees wax - 20 g Wax
Surface fairly good but not homogeneous Carries beyond Knife Edge Electrical Cant blow off fine chips - Hard —

Tracking Test 30

80 White Montan
41 Pure Bees wax

Not Electrical - fine Unhomogeneous goes to knife Edge - Even when walks wide chips on edges of walls — pure white, Not good -

#310 80 white Montan F
20 P White Bees wax
added 2N g Barbeny wax

Awfully Elec all chips Conchoidal + all stay on Cant blow off - grain Coarse Not good Can go to Knife No Chatter

Tracking Test 31

#311 90 White Mountain F to 170g.
10 Paraffin 140°
added 25 g Paraffin wax
Electrical – non homogen
fine grain mottled –
Uneven surface and veg chatter
Can just go to Knife walls
Chip –

#313 60 White Mountain } Cast
40 Paraffin } to 170
added 40 g Paraffin wax
Only just old Elec, Coarse
Chip – Can go to Knife –
some chatter marks when
very deep – It is not perfectly
homogenous walls
dont chip
Seems talcy sticky

Tracking Test 32

#312 – 50g White Mountain
50g Paraffin 140°

Not Elec – Continuous chip –
Fairly dry its not homogen
but nearly so – Think This
Can be improved to be OK
Either by Clubbing or by
mixing Ether things to stop
Crystallizing – Very fine
Chatter like Cylinder
Surface about like veg
practically no chatter
but spots that look like
them but they are the
unhomogen parts, walls
dont chip – J.T. Willson

Tracking Test 33

#315 90 white Fronted + } see #315
10 Baybreasted

Horribly Unhomeogram
NG + Elec

#316 80 w Fronted + } see #316
20 Baybreasted

Electrical, bad - not homeogram, only trace chatter
Can go to Rufs

Not pronounced - weak
not Clipped —

Tracking Test 34

#317 60 w. Fronted + } see #317
40 Baybreasted

Bad - Electrical Coarse grain - goes to Rufs — not pronounced

#318 80 white Fronted } + see #319
20 Spinnacetty

Electrical NG —
Very Unhomeogram

#320 80 white Fronted } + see #320
20 Spinnacetty

Electrical - Very Coarse grain - Can go beyond Rufs
NG

129

Tracking Test | 35

307-90 white Munton
10 Pure white Bearing } F
& add 20 gr. 9a Fg. } 10 Tkg

Very fine gram Not Elec
goes way beyond Knife
No defined Chatter mark
Coat Straggling pits resembles
Chatter Coat Homogenous —
THIS IS VERY
promising — if got
Elec more homogenous
Grains hard, fine
glistening surface

130

Tracking Test | 36

90- white Munton
10 [illegible] } + #323 326

Very Unhomogenous, two
Subshine yellow + white
Segregate out VERY
Elec — goes to Knife —
NC,

#324 80 white Munton
20 [illegible] } + 326 #324

Not homogenous. Coarse
grain — just goes to Knife
Not Elec — walls dont
Chip — Not Extra promising

131

Tracking Test 37

60 white Mantle
40 wax from Shellac) Tan

Mat Elec — Not homogeneous
~~best formation~~ goes to knife —
only just Pronounce
wafer last chip —
Nice appearing Cylinder
Surface to Eye —

#22h 50 white Mantle to 170
30 wax from Shellac
Stearic acid
Slightly Elec — good
looking Cylinder —
Dream Hard — only little
of Chatter — but uneven
Somewhat pronounce

132

Tracking Test 38

Electrical Extremely
Unhomogeneous NG
dreadful

Some Elec Wax of Hair Crystals
NG —

Tracking Test 39

Like 328 only not so much
luer like cry – Some Elec
not good just goes to
knife –

#330 SD White Mountain
SD Stanley

Only very slightly Elec –
better surface than 328 + 329
but its not homogen
Coarse break, chips at
knife Edge Not precise

Tracking Test 40

Elec – Horrible
Segregation of ingredients
very –

Some Elec – Not homogen
spalled break – goes beyond
knife – surface not
fine grain – not precise

135

Tracking Test 41

#333 60 Myostan
4% Glucose Buffer) + #33[illegible] F

Horribly Electrical
All chips clung
Can't blow off
NG

#[illegible] 90 of White Bicarbonate) F
10 of Yeast Base
add 30 of Glucose.

Not Elec - fine grain
Continuum chip
Neg Chatter Marks
VERY PROMISING
fine Surfactant Cylinders glistens

136

Tracking Test 42

[illegible] 17%
[illegible] Buffer

Horribly Elec all
Chips clung - Can't
blow off - Ignores Knife
Spacey Granule

#341 [illegible]

Bad Unknown Specimen
NG

Tracking Test 43

50 g Morton
50 g Blended Cigarette

Nat Elec – not a fine grain wax – speaks breaking down beyond knife – Pure white Might do of Chilled or some addition to stop fine Capacity the appearance not homogeneous but fine grain

Promising

Tracking Test 44

Not sufficient Elec Conductivity – Reg well defined Chatter Very sharp walls – Think it a little unhomogeneous but would take very little to make it fine –

VERY PROMISING

Tracking Test | 45

#347 50 Grain Hdcc 350
50 Grain Hdcc 350
Nat Elec

Lts Like 347 Cut nat
so good —

#351
Like 350 — Nat Elec

#352 nat Elec
Like 350 —

Tracking Test | 46

#348 50 Grain
50 Grain

Nat Elec — goes away beyond knife — to pretty left as Advance base marks it — Very fine grain Very smooth Cut Scarcely a sign of rpats in tracking or any chatter — To make this Ideal work will require Advance base to the 3 or 4 Turn larger —

VERY PROMSG

Tracking Test 47

[illegible] — 60 of Myrtle
41 of Eclipse

Too soft —
not Elec

#256 [illegible] 58 of Myrtle
50 of Eclipse

Too soft —

#357 90 Myrtle
10 [illegible]

Thes is better, not so soft, but ball marks it & surface not so perfect as 354 —

Tracking Test 48

#355 — 80 Myrtle
20 [illegible]
not Elec not Homog

Too soft — Rough track
Walls bad — Spoilt by advance balls —

#358 60 Myrtle
40 [illegible]

Entirely too soft.

#364 57 Myrtle
43 [illegible]

Too soft balls destroys it

Tracking Test 49

50 Smooth
20 Pufferfish Brown

Nat Elec - too soft - balls hurts - but goes beyond knife & cut fairly smooth - a little pronouncy of get harder -

#363 Leo Smooth
40 Pufferfish Brown

Nat Elec
Coarse surface, ball cuts - too soft -

Tracking Test 50

50 Smooth -
50 Pufferfish Brown -

Nat Elec Ball cuts - not fine grain surface -

#365 50 Smooth
50 Pufferfish

Coarse grain - Very soft - neg -

#[illegible] 50 Smooth
50 Pufferfish

Coarse grain - too soft, Ball cuts bad -

145

Tracking Test 51

(2a Nujol
4c Paraffin) + oz ft

Too soft, ball drags —
Coarse grain —

12 Nujol
12 Paraffin
Not Elec
Coarse grain not good

146

Tracking Test 52

(12 Nujol
12 Paraffin) + oz ft

Coarse surface — goes to Knife — not very pronounced
Not electrical,

Some Elec — Coarse grain goes beyond Knife — little soft, not pronounced

147

Tracking Test 53

Very little Elec of any ball smears — grain a little Coarse.

Nat Elec Coarse grain — not Homog —

#376

Nat Elec, ball smears Coarse grain — wedges break out —

148

Tracking Test 54

Nat Elec — fine grain — Reg shatter, Walls sharp Can go beyond knifs — Ball smears slightly waxy bigger Gaze

PROMISING

Nat Elec — only med fine grain goes beyond knifs — not near as good as 381 ball smears slightly —

Tracking Test On Cargo Dec 55

#402- and #417- was acted and turned down the following day one shaved by Pa. Limited paid day then left ship several days awaiting Mr Adams inspection

On May 6. 1914 they were sent to New York to W Miller for shaving and tracking.

Tracking Test 56

151

Tracking Test | 57

Nat Elec
Coarse grain - walls, chips -
not good -

Electrical, Chips tracks
Chng - Unchanged -
Very Coarse grain - NG

152

Tracking Test | 58

Very Elec - Coarse grain
NG - ball smears -

Nat Elec - Very Coarse
grain - NG -

Nat Elec - ball smears some
Coarse grain - Not good

153

Tracking Test 59

Electronic, Very Coarse grain —

Nat Elec, Somewhat Coarse grain — Ball only smears little, Little fine shell. all over surface —

#402

Not Slightest Elec — Beautiful surface sharp clear walls, scarcely any ball smear Reg Even fine small shell can go T. any dir.

VERY VERY PROMISING

154

Tracking Test 60

Very little difference between this & 402, ball dont smear at all in this — Requires more test —

Grain not so fine as 402 The latter (is) 402 best & thinnest

Not nearly as good as 402 which is best of these series —

155

Tracking Test 61

Not Elec not homog - walls chips - not good -

Not Elec Coarse grain - Dont smear at Cake -

#420 to 170g added 2g [illegible]

Slightly Elec - gran not fine Enough - Dont smear on Cake -

156

Tracking Test 62

60 170g added 2g [illegible]

only slight Elec of any grain family fine Cake not so good as 402 no smear from Cake - Chalky ld defined walls faintly chipped -

1313 70 Stearic Acid + 30 Bayberry

Very Coarse - non homog

1214 60 Stearic Acid + 40 Bayberry

Not Elec Moderately fine grain not very pressing

Tracking Test 63

Not Elec - Mod fine grain
beyond knife edge.
Chatter somewhat even
+ fine - its only roughly
unhomogeneous - somewhat
pronounced -

#439 ↓↓ Vegetable oil

Like 438 -
not Elec - but count go Quick
to knife edge no Glacc
excess Think it hard
Very fine Chatter Even -

Tracking Test 64

Not Elec, grain only mod
fine - Can go to knife
no smear - - Not quite
homogeneous -
438-9 431 two hard

Horribly Unhomoge-
Walls adc chip out
bell smears Mg
not Elec

159

Tracking Test 65

60 Ferric Nitrate
40 Tap water
20 Distilled water

Nat Elec
surface like Reg goes to
knife – nat elec Ball
dont smear,
walls chip some, ill defined
Chatter –
somewhat creamy

40 in Ora Clear

Elec. macrolitte –
Its like 436 grain little finer
but Cheeks

160

Tracking Test 66

all fine chips – Elec – ball
smear, surface rather fine
grain – nat processes
Checks

Nat Elec – No smear Tensile
to too hard – Nat elec
chip breaks when keeping fang
Six to Cy

Trashing Test | 67

1 Stannic Acid
1 Wilks Brunton
16 Na Stannate

Nat Elec Handly goes to Knife -
No smear surface Microroughness
Chip exits round - surface
not good enough - Chip
breaks on deep Cracking
Not pronounced

10 Stannic
1 Wilks Brunton
1 Na Stannate

Too soft -

Chip Cracks - Elec,
Wilks chip - Not good
10 Stannic Acid
1 Cannizzaro
3 Na Stannate

Trashing Test | 68

Rather coarse surface -
Not good.

Stannic Acid
Blank
Na Stannate
Coarse grain
Not good

Coarse grain

Tracking Test 69

#473 1 Stone Road
1 Grass
10 Mr Stewart

All checks
Horribly Unhomogeneous

#474 10 Stone Road 1 Map 4
3 Mr Stewart

Not Elec - Smears Little -
rather fine grain
Challan'll defend -
Some Promise

#474-A - same as #474 + 3½ Sonic

Not Elec Chip breaks
in deep
Base better than 474

Tracking Test 70

5 Stone Piers
1 Myrtle work
6 Mr Stewart

Surface Coarse not good

#475 1 Stone Piers
1 Myrtle work
10 Mr Stewart

Not Elec - walls fair
goes beyond knife pretty
from surface No ball
~~chuck~~ Smear, Somewhat
Promising

9 Stone
1 Vegetable Way
9 Mr Stewart

Not Elec, grain not fine enough
goes to Knife -
Full Checks -

Tracking Test | 71

7 Stearic acid
1 Oxystearic acid
5 Na Stearate

Not Elec fine grain, goes to knife
Reg Chalky No emery, probably
Not too hard accurate deflection
PROMISING Check in Cy
fine cracks

5 Stearic acid
1 Oxystearic acid
1 Na Stearate

481

Not Elec but smear some
goes to knife - grain fairly
fine - Not very processing

1 Stearic acid
1 Na Stearate

482

Matted ½ NG —

Tracking Test | 72

5 Stearic acid
1 Oxystearic acid
7 Na Stearate

Not Elec no smear, grain
not good - Not processing.

Very Elec - NG -

494

Electrical —
not homogeneous

500

Electrical

No smear - grain not
very fine —
No smear

167

Tracking Test | 73

501 [illegible] #

Electrical -
No smear
grain not fine

502 [illegible] #

Electrical - grain fairly fine - No smear does to knife - not really processing

503 [illegible] #

Slight smear - Electrical
Mechanical

165

Tracking Test | 74

505 [illegible]

Very Elec - coarse grain Chips break goes knife - Not good -
Very little smudge to surface

506 1 [illegible]
10 [illegible]

Very Elec - Chips break - surface smudges - grain fairly good - goes knife Not good -

517 [illegible]

Only little Elec Chip break
Round slick - walls chip -
~~Coarse~~ Smudges much
Not good -

Fracking Test 75

518 Drops of 402 using Fine grained Candidate
Mat Elec - good,
Better turn it off again —

519 Drops of 517 - using Fine grained Candidate
good - Mat Elec Surfaces
good - No smudge
VERY VERY good
bad spots w/t segregation

520 180 g of 402 - 10 Ammonium
Same as 519 -
good - mat Elec

521 180 g of 402 - 10 Quantum
Like 519 two more fine
Chips stuck - Segregation in
places — Mat Elec

Fracking Test 76

523 180 - 402 - 10 g Dioctyl
Smudges too much -
@ Thermia Lake 519 - Mat Elec
Segregations —

524 180 - 402 - 10 - Paraffin
Like 519 - Same kind
segregation, smudges only a
little - mat Elec

5216 180 - 402 - 10 g Japan
Smudges - Bad Segregation
Acts like 519 -
Turn it off again +

527 180 - 402 - 10 g Octocrit
Near like 519 - Smudges
little - good —

Tracking Test 77

528 150g - 402 - 10g Vegetable
What I have added Reagraphs dragging off the Back —
518 to 528 all have it —
Thus 528 good but drags
150g - 402 - 10g Canola Oil
529 OK but drags only a little @ Tears —
Must get rid of this drag

530 180g - 402 - 10g Bayberry
Promise - Don't drag
just Counts surface —
its Too soft - grain fancy fern
turned off again

Tracking Test 78

Like 519 — drags —

529 150g 402 - 10 Vetiver
Drags — otherwise OK

528 150g 402 - 10 Almond Oil
fine grain — Drags —
otherwise OK

534 150g 402 - √ Tea Tree Oil
Drags like above —

536 180 — 402 - √ Almond Oil
Drags a Smidge.
Little Else

Tracking Test 79

537 180 – 402 – 5 g Spurious
Drags - Quits + Somewhat
Elec + 2g –

---

538 180 402 – Ok Shutting
Quits + drags - Some /
Elec –

---

540 180 402 – 5g Altogether
Only Drags
bad - not Elec - good

Tracking Test 80

541 180 / 402 – 2.5 D.12 Fair Color
Not Elec Drags
Turn it off again from
front – Get Back – Good

543 180 / 402 – √ Smooth
Quits Dont drag
too soft –

Go Smooth
To Right Quits
Drags Quits Coarse
+ Elec –

Tracking Test

#403 – Castrated 5-7-14
turned off & shaved a day after
and also tracked first time

Drags bad, will season 3
& turn off after 3 days +
see if drag three days –

#402 – resolved after 5 days
5-12-14
deemed to drag [illegible]

Tracking Test #81

543 90 Mynill 10 Jn Front
Smith & Drago
Slight Elec – Very twisted –

547 Nat Elec Drags. bad
turn it off –

545 Very good – only a
trace of drag – very little
nat elec – VERY promising
test yet for no drag
Equal 519 allowance
with best drag

Tracking Test #82

551 Shad: Elec Bad drag
OK fine dont
Drag no No Smith
sharp clean cut,
80 Mynill – 15 Mentan
1545 just like 402
No shunt or smudge.
sharp – nat Elec –
75 – Mynill 20 Mentan
546 Not so good as
545 Drags a little –

Tracking Test | 83

515 – Very perfect Except leading ball drags away no smut drag. Drag

519 ditto – ball, Drags – –

521 ditto Drags

526 ditto Drags fine surface

527 Drags – alleys ok –

Tracking Test | 84

530 Drags –

541 good surface only drags a little –

548 Drags just a shade of Drag – nearly good enough surface good fine grain –

551 Drags Considerable surface rather very fine grain –

537 Drags rather much –

Tracking Test 85

557 Drags Bad —

555 Mulled. No drag good fine grain, if it wasn't Mulled it would be very good — PROMISING —

559 Mulled. Drags —

558 Drags —

552 Very Little Drag —

555 Dirty spots in it surface not very f— Bad drag —

Tracking Test 86

556 Dirty. Very Bad drag

560 Some drag - chips break shadow of Electric Mulled —

561 A little drag - surface not very fine —

Tracking Test 87

605 Very bad drag — not fine surface

604 Drags bad, "

609 Drags — bad "

610 Drags bad "

607 Very bad Drag fine surface

575 Drags a little Not Elec
smudges —

Tracking Test 88

612 Only little smudge
No Drag — Looks
promising — Not Electric
Cuts good — quite soft —
for soft wax this is extremely
good, for harder wax
want twice as much
Accelerator —

---

613 No smudge or Drag
Looks OK but surface not
as good as 402 —
Might get surface better —

Training Test #89

614 Smudges bad - Very poor surface -

615 Same as 614 - no -

616 Drags bad - fine surface -

617 Drags - good surface

621 Too hard no drag or smudge Mat Elec but surface not fine, mix that segregates -

Training Test #90

623 OK - good surface not Elec but chip breaks - binder is coarse & ill defined, Mixture too hard no smut or drag -

625 Chip breaks to powder too hard not Elec - no smudge or drag - fair surface

624 To hard no smudge or drag surface only fair -

Tracking Test 91

628 — No summit or summidge Too hard, Knife edge chips a little on edge. Wavelite surface showing fine felted Crystals, Clean cut Promising if softened a little Chipping Condition - flaws - cracks

629 Cracks in Casting No summit or summidge - Knife edge bridge cracks chip Look too hard no Feller Near 627 if too good, Less Wavelite

629 Horrible surface Stuff, Dont mix together NG

Tracking Test 92

630 Electrical two stuffs dont mix at all horrible surface NG

631 Bad mix but not near as bad as 629 630 - not Elec

632 Bad surface made worse by Dirty - Comes off in fine chips - not Elec

Tracking Test 93

632 Wavelite surface
Drags bad - not Elec

635 No drag fair surface
not Elec - but blade too
brittle. Knife edge chips
out a little

636 Surface ~~and~~ only fair
not homogenous or very
fine grain - not Elec -
only Pronounced

Tracking Test 94

637 Knife Edge Chips —
~~Also~~ too hard - no drag
or smudge not Elec

638 Not Elec - Knife edge
seemed to Chipping out
surface not quite fine
enough grain, Drags
seemed to - should be
softened a shade,

641 Not Elec. No drag
looks fair. But has
fibrous surface —

Tracking Test 95

642 Very fibrous not Elec Surface Not Elec
~~not~~ To get this OR
must have something that stop fibrous Crystals from coming to face.

643 Good — fine green fine surface no smear or drag — Knife Edges OR don't Chip —

Only trouble is a slight fibrous Crystalline a little something 2 or 3% might stop it —

Tracking Test 96

644 V G too Very Electrical

645 = Not good surface.

646 Bad surface Not Elec Knife Edge Chips out too hard —

647 Hot day — Temp 90 Today Pretty fair surface Not Elec — no drag or smudge, Contains Chip Knife Edge don't break out

PROMISING

Tracking Test 97

5[illegible] some drag - surface not very good 90° Falu body

545 Pretty good chip not Continuous - no drag or smudge - pretty fine grain Think colder colder 62 too brittle if softer would 62 good VERY Promising

546, 90° Falu - too hard with light chip comes off Continuous but leaving good surface to powder - good surface no chip out walls - Want to 62 softer -

VERY Promising

Tracking Test 98

647 About same as 546 - but harder chip comes off as powder (90° Falu)

648 Same as 546 - chip all powder too hard -

649 - Beautiful surface a OK - no smudge or drag but too hard chip comes off as powder

650 Very good - chip Continuous, only a shade of grit at edge ball

VERY VERY Promising

Tracking Test 99

651 Almost perfect
fine grain Coulemmes Chips
~~precession~~ tracking
Surface, better than 650—
90° Fahr.

Dup of above # 651

Almost perfect, fine grain surface
about like Rag No drag or cut
Chatter marks coarser than Rag
but even goes further than Knife
Edge— If grain can be got finer
it is OK not a sign of Electrical
= Chip Coulemmes down to
Knife Edge — deeper it breaks
into 1/4 Lengthwise —
Temp 84° Fahr - dry cut at this

Tracking Test 100

652 Very Electrical NG

654 Not Elec coulemmes
Chips even beyond Knife Edge
Appears fine but it Drags a
little — too soft.

Notebook Series -- Notebooks by Edison
Notebook, N-13-10-31

This notebook was used by Edison during October-November 1913. The entries pertain to the composition of record blanks and to the molding and transfer processes involved in disc record manufacture. At the beginning of the book are notes, which appear to continue from N-13-08-05, involving experimental transfers made with various record blanks. Subsequent entries describe experiments on the composition of discs, particularly the grinding and fineness of the powder for blanks, and on the volatility of different varnish additives. A note by Edison indicates that the volatility experiments were continued by Louis (Ludwig) Ott. The entries for November describe experiments involving the composition of the powder and the Condensite varnish for record blanks, as well as experiments with variations in the pressure used to press blanks. Key ingredients being tested for the varnish include "para" (paraphenylenediamin), "penta" (pentachloraphenol), and "6/4" (hexamethylene tetramine). (Edison filed for a patent for "para" in 1914, which was issued in 1916.) At the end of the book are notes on a series of experiments with various screens, scrapers, and "tap" methods for adding the ground powder to the record blanks. Edison's notes indicate that employees Peter Christensen, Archie D. Hoffman, Sherwood T. (Sam) Moore, and Frederick P. Ott assisted him in some instances. A printed table of pressure and temperature values has been pasted onto the inside back cover. The front cover is labeled "Disc Record 1913." The pages are unnumbered. Approximately 120 pages have been used.

~~Nov~~ Oct 31 1913

Expts Coulmn 3 to 1

7/15 Blank Req S-
all free OK 11 2nd 1
Print 9 OK 3 poor print

good 6
fair 6
12

RO 3
No Runout 3
faint 5
Big 1
12

Surface
fair

Run out
not good

Vernon 632 213 blank
plates baked 200 in oven

10 ok 1 comet 1 dia-

Print 6 ok

good	4	RO	8
fair	2	faint	2
load	6	no RO	2
	12		12

Scuffs
Bad

RO
Bad

728 Blank 33⅓% Lapsible final
66⅔ grade
5% 6/4

Prest + Treatment Req's Calendaring

2 Triumfax 2 Aqua Chrysler

good 3
fine 1

RO 2
faint 2

Surfaces
good -

Remarks
fair

Blank 3 to 1 - 5% 6/4
2000 lbs pressure on blanket
1 Transfer press
Press, OK - 1

good 1
Fine 1

Faint 1
Very faint 1

Yellow Show Down Print

Surface
good

Run
fair to good.

This appears to show that it is best to use higher heat on Transfer than on Prints - say 100 on Transfer and 75 on print

Reg blanks + Van -

Transfd at 50 Lbs

Printed 75 Lbs -

Free 7
Stuck 5 -

Transfer 1 OK 1 Discards

Print 4 blanks - OK 4 -

good 2
fair 6

RO 4
faint 3
Very " 1

Surfacing
Not good

Remove
Not good

Transfd 75 Print 50
7 free 5 stuck - OK 4 Comet 2 Discds 6

Prints 6 OK -
Very good 2
good 7
fair 3
12

RO 3
No RO 3
Very faint 1
faint 5

Surfacing
fair to good

Remove
fair to good

Oct 31 1913

Fred Ott - ground powder -
with Shenk Reamer + 5/6 6/4 in

Disc made in smaller machine -

Unground Calipers 267/1001
Weight 19.9 -

ground on Chilled Iron Mill - 249/1000
Weight, 20.2
ground 1 Hour

The surface on ground is
unfavorably better, 3 times as
fine, The difference is very
surprising —

WE ground + 1 hour more

The ground stuff gives a brighter
Color to disc —

We ground it 2 hours & needles does — same lot being ground 1 hour longer

Its blanks + calipers 211/1000
Fred probably get more heat on it — its also a black coheran 1 hour was enough —
Its surface is very shiny —
Weight 20 grains —

Think this blank wanted
Compares too much on our
tracer for schedule —
get too long a heat before
Blank in making / should
get 500 To 600 pulsations

+ that 2 centered 1 min high
at 1000 + 6 cool with 100 To
105 grains + Venus with 6% Paula
2 para 220 deg bake 10 cc
ammonia Points Can be
same schedule but 1000 to
1200 To fill with 75 to 80 Lbs
steam

If original blank dont get good pressure + heat the veneer on backing has to fill the holes of the end surface & we have scratch —

Unground disc repressed same pressure as before 5 min on platen — Original Diameter 2.295 — after average 2.303 - increase 8/1000 top + bottom Edges when pressed
Thickness 267 - Repressed 269 -

Disc 1 hour grinding - repressed original thickness 249 now .232

Original Dia 2.293 now 2.322

Disc 2 hour grinding - repressed
Original thickness 211 - now 210
Original dia 2.293 now. 2.298
This was consolidated more than the others on 1st press by having more heat

Fred Duplicated Raw fibre + 2 hour grinding.

Raw. 1st press thickness 294 -
Dia 2.295 -

after repressing free edges
Thickness — 268.5
Dia - 2 330

2 hour grinding 1st press thickness 231
Dia - 2.290

after repressing with free edges
Thickness 225
Dia — 2.297

Fred transferring on repressed Raw fibre with Fred 4th 350 deg transfer Varnish, Top side didnt even indent the fibre in Veneer - Bottom side shows record of fibre but not plastic Enough to make a clinch —— These hard high temp baked Veneer are no good wants the Rag or softer - will do it tomorrow -

Alpha Naphtol MP 94 C BP 280 C

Oct 31 1913

Experiments to ascertain the Volatility of deferent substances we have used with good effect in the Varnish for discs

10 grams taken each case
Temperature kept at 350° Fahr for One hour -

Acetanilid	loss	MP 113 C.	49 %
Alpha Naphtol	"	MP 94 C	66.5
Tetrachloronaphthalene (Impure)			35.0 MP 182 C
Parachloroanilin nearly all gone in ½ hour			
Toluolsulphochloride Para.			43.6
Paraphenylenediamine		MP 140	42. BP 267

A large quantity of Paraphenylenediamine sublimes on the edge of the dish which was weighed as not being lost,

Parachlorganaline Can see it condenses as a liquid on the Edge of the dish

Toluolsulfochloride, gives off gases boils 140 C. Reacts very acid to Litmus

Louis Otl is trying others.

Nov 1 1913

Small Disc Expt Continued

Put reg veneer on unengraved fibre disc — Phenomenon It clinched mechanically & could only be got off in ½ inch chips showing fresh hard — the pressure tiring to wheel the chips of veneer caused off clean of fibre, didn't tear the surface of blank off as with Reg blank The clinches pulled out without detaching any of the surface of the blank —

On the Reg blank by warming slightly the whole of the veneer can be removed clean —

The veneer clinches more firmly than any we ever had & there is to be no separation to give hollow sounds of RD —

The surface of the blank being engraved is coarse

The fine grained will be better
Thus reducing the Grain of
surfaces -
The transfer heat used by
the top veneer should transfer
at all or even give impression of
the fabrics -
The Eggshell used very fine
grained.

The 2 hour grinding sticks
Even tighter can't get 1/32 chip
off - on heating veneer
pulls off clean, and infinitely
smoother than with unground
fabric, Thus ensures a better
surface - surface
should be nearly as good as a
double transfer, The top veneer
should be capable of withstanding
impression of fabric, heat too
low / Should any 2 hour
grinding with 5'/6 6/4
+ Reg Veneer should be heavily

The One hour grinding is
Clenched very hard, could scarcely
get it off Even in 10/000 chips
have to be heated very hot to
get off + when it is covered with specks
shows it has worn the Clinch —
probably need more heat, or Van more pressure
The 2 hours had fewer Clinches +
Came off hot Easy — et so for
preference —

Fine	1	No RO	1
Fair to good	2	Very faint	1
good	3	V Very faint "	1
	6		3
			6

Fair to good — fair to good

Calliper 289 for 1
289.5 for 2
The 275 Fahr Deeley will not clinch on
2 hour grinding —

This shows we must not broke too high or higher than 225 — or we must reduce our 6/4 — down to where Reproduct dont cut —

719 Blank 5/- 6/4 – fine ground

Transfer Req -
3 OK all

Print 3 all OK

Surface
face to grind

RO
face to grind

Hoffman Blanche -

5% 6/4 4 to 1 ground in Req
Quant micc 1000 Lbs
pieces 4 mm screen
100 Lbs

- Too Coarse ground

What are they

738 Blanks 2 blanks 632/of 1536

2 freeze dried Prints 2 OK

Thickness before transfer

342
327
333
320

4 | 1322
330

330

Thickness after transfer

333
316
327
308

4 | 1284
321

321

Thickness after freeze dry

338
320
323
310

4 | 1291
323

323

1 = faint to good
2 "
1 time
2 "

NO RD faint RD
VVV faint RD

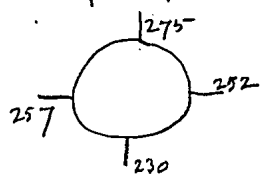
1 to 4 5°/1 6/4—

Printed. 4th time —

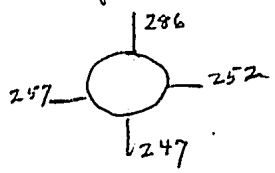
1 fair
2 good.

M19 Blank 5.06/4 — fine grained Flod

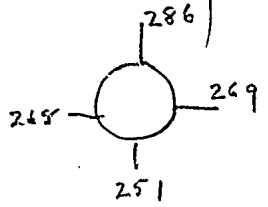
Before Machining



after



Printing



good — no Run out

7/9 — MP —

632 Yan 1536 — 1 free 1 slick —

5% 6/4 — Reg ground
1 ok 1 Casual

before Training

237
249
233
242
4 | 961
240

240

after training

233
241
231
235
4 | 940
235

235

after Practice

235
240
229
234
4 | 938
234

234

1 = fine — No RD
2 " — VVV fault

1 good — VVV fault
2 fine — No RD

Tried dobs no 6 Bacc mix
1 hour 1½ 2 2½ + 3 hours
+ ungreased. The first hour
marked a big difference over
ungreased after that there
is very slight change
The 3 hour greased chicken
is a shade better than 3 hours
in no 6 Bacc – The Bacchus
1½" pebbles. There were 6 or
some 3 @ 3½ over ~~2~~ in
Complete days reheat)
Thank 2 hours were OK

Pulverizing
Mortar 6 cm. —
1st time three made rolls fine
got 47% 2nd time 53% —

Screening Reg black powder. 7/19

20 grams Taken

Remaining on	60 mesh		0.5 grm
"	100	"	2.5 "
"	150	"	8.5 "
"	200	"	2.5 "
Thru	200	"	3.5 "
			17.5

Most all go thru 150 — about 160@180 would be OK
between 150 + on 200 is OK
Weighed

20 grms

Remaining on	60 mesh	0.2
"	100	7.5
"	150	7.5
"	200	2.0
Thru	200	2.5
		19.7

Between thru 150 + on 200 is OK —

3½ hours of Reg powder ground in
Cullman Mill — 20 grams
6.2 grms on 200
13.8 thru 200 —

Wet
20 grms
Closed screen

70% Passed
Pass 200 mesh
used this for test —

Thank this is a
from Dyz.

26.6 Van
NO 32 Reg Van with
150 mlg Naphtol Blue MS
to Dyes Veneer Black
Darker than Reg Veneer handy
see them =

NO 33 — 26.6 Van without
Penta or para
Ref as 333 Para + 150 mlg
Naphtol Blue MS
Naturally darker
than Regular Veneer

34— 2616 Vancomycin
Para or Penta Left hand/4
just in 666 Mdq Penta
& 150 Mdq Nuptial Chambers
Takes hours for these to
get rubbery + coherent Req
goes in few minutes
& Para alone 5% of the amount of Regen without
Penta also goes rubbery
a short time after Regidon
It seems to want Paraphosphon
to make the Vancomycin
penetrant

719 powder ground 2 hours
1000 lbs press

Not Baked
Transferred 4
Free 2
Stuck 2

10k 3 pellets

1 good 2 fair to good	no RO faint RO
1 good 2 good	VV faint no RO
1 good 2 good	no RO no RO

Surface [redacted]
fair to good

Remark
fair to good

719 fine grained
Unbacked
only 300 lbs pressure

3 trays
1 Slide
3 OR 1 Total

1 good	no RO
2 "	RO-
1 fair to good	faint RO
2 good	V faint
1 good	no RO
2 "	"
1 good	

The contact surface
is hollow in center,
there are 1 or 2 soft velvet

Surface
Fair to good

Results
Fair

Prints - 1 failed off edge
2 failed on middle than rest
all failed on middle

The smaller pressure Hoffman
uses the more likely the
print will fail at 300
it fails all the middle
least at 1000 it don't fail
up from to center 1/4"
of face the same

The heavier balls in the X06
Ball mill flake 719 powder
up considerable
Hoffman. Thanks for getting
the Ball mill powder
there has been greater
it will deflake it —

Originally these blanks were pressed by Kaffum at 300 lbs by Kinsley
719 - fine grained then cut blanks + pressed 1000 lbs

Not Baked -

4 made 3 OK 1 Discard

Pressing 4 poor print

1 good	No RO
2 "	No RO
1 good	No RO
2 V good	No RO
1 fair to good	No RO
2 good	No RO
1 fair to good	No RO
2 "	V V faint

Left-side print

719 time ground Not Baked
pressed by Hoffman 1000
lbs 4 hot 100 lbs steam Cool
6 to 8 min —

3 free
1 shrunk —

OR 4 —

Printing — 3 slack good fill
at Edge 1 poor print

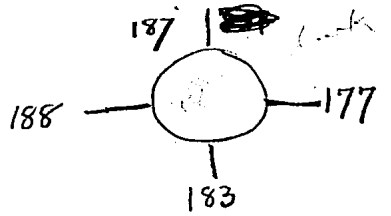
1 good	V faint
2 faint to good	RO.
1 faint to good	No RO
2 good	No RO
1 faint to good	RO
2 good	VVV faint
1 faint to good	No RO
2 good	No RO

If we put transfers on this it will surely leave a RO = Where its more dense darker + smoother the surface will be less coherence rough it will be & rough the Velocity be louder ——

Not fine Enough

719 ground glass —
Baked 1/2 hour 200 deg

Calipers



11/1000 def
too much —

Tried Rapder on rough Blank
Very Loud + a RO

RO very bad coherence at pressure over point that is more closing (12) load greater pressure Illus def in pressure + smoothness Causes RO,

719- Blanks fine grain, 2 hours
larger balls

Baked ½ hour 200 Fah

Transferred 5

5 OK

Print – 5 poor prints

3 = Poor print Margin Music OK
one Crack on Margin of one but Comp.
2 = Poor print on Music not filled

1 fine
2 fair to good — faint no RO

1 = good. — no RO
2 " — no RO

1 fair to good — V V faint
2 good- — ~~fair~~ No RO

1 fine — no RO
2 good — V. faint RO

719 – fine ground – not enough pink

Made at 1000 Lbs –
Baked ½ hour 200 Feeler
Lot 341 335 335 gms
Transferred 900 Lbs
Req 4 min d-color decals
OK2 decals 0
Cancel 1 plate
didn't come down ade arm

Print Req schedule 1000 lb

Press Prints around Edge
The plates on transfer that plate
didn't show its surface is
Even all across the printing

1 good	faint
2 "	faint
1 good	no Rd
2 "	no Rd
1 fair to good	no Rd
2 good	

1 fair to good — faint-
2 good — V faint

1 good. — no RO
2 fair to good — faint

1 fair to good — faint
2 fine — no RO

1 good — V. faint
2 " — no RO

Fair 2
Fair to Good 5
Good 6
Fine 1
14

ROut 1
No RO 5
faint 5
V faint 2
VV " 2

Not ground Enough
719 — fine ground
Transfer-Rag Rock —
6 OK 1 Cracked Edge

~~Pi~~ Transfer made 7
Sticks 2
Free 5

Pretty OK 2 Cracked 2
Poor prints 3. Bad Edge not filled — No cracks — 7

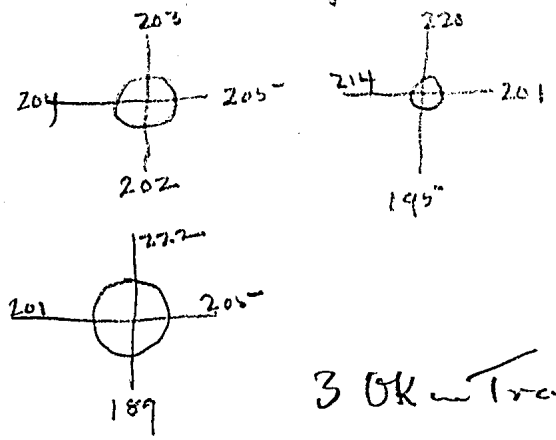
1 fair to good — VV faint
2 " — VV "

1 fair — faint
2 good — no RO

(1 fair — RO
(2 good — no RO

719 Baked Ivanofsk Reg
Schedule 800 lbs

Wt 367 367 365



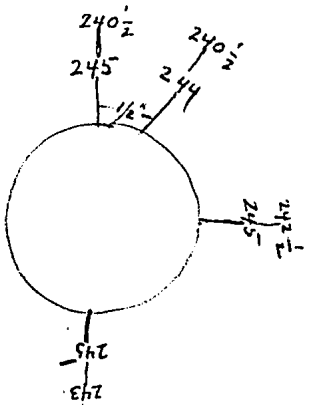
3 OK on Transfer

Print 3 all faded face on edge

1 good.	faint
2 "	VVV faint
1 good.	RO.
2 "	NoRO
1 faint good	no RO
2 good	V faint.

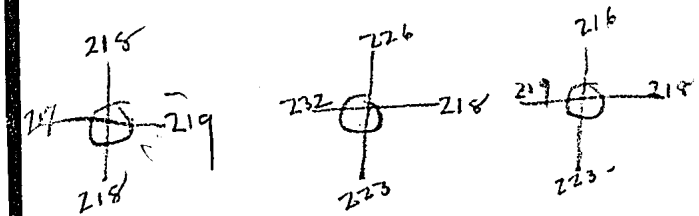
No 1 before printing average 218/1000
" 1 after 247

No 2 224.7
259



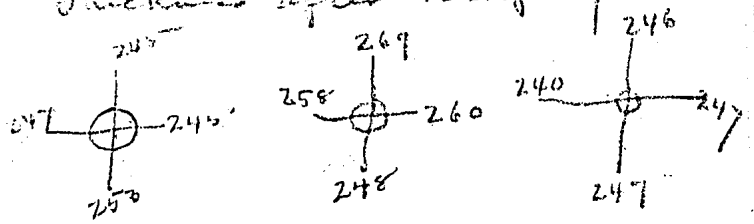
Baked from ground
419 — 1000 lbs Req sch 800 Lbs on Crank

Lot 395 395 397



Transfer 3 10K 2 Comes
free release 3

Thickness after transfer



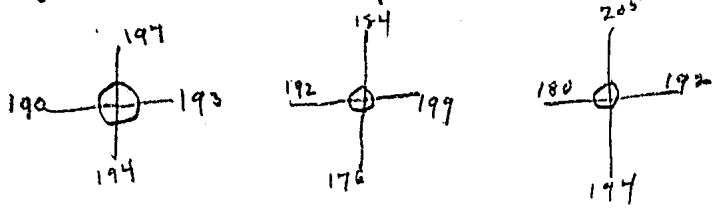
Print 3 — distort full out edge

1 good
2 fine
1 good
2 good
1 fault to grind
2 good

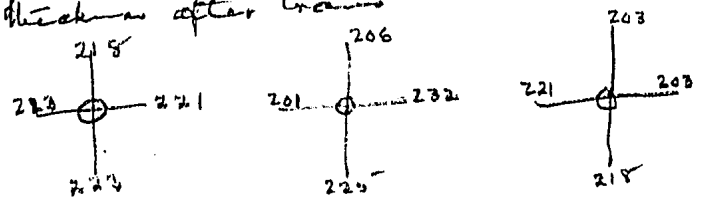
no RO
no RO
VVVV fault
no RO
"
"

719- Baked [illegible]

Wf 344 342 347 Calibration of Blank



Used this schedule -
2 min Cook at 1 on Low 5" Height 600 CC
8 to Cool = Transferred 3 6 counts
Thickness after bake



Printed Reg Schedule -
| Poor print + Cracked at start of [illegible]
| " " in Muscle
| " " "

Not tested = Poor last prints, schedule bad + probably grew too low

grand fun

719 — Baked
at 332 329 328

184 – 178	183 – 191	184 – 183
200 195	179 187	186 – 181

3 Blanks transfer

223 – 193	214 – 205	202 – 207
210 – 208	210 – 205	207 – 210

Oko 3 —

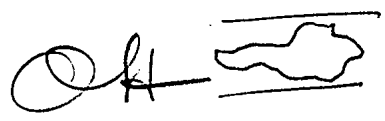
Printing — Registration 1200 dpi

2 Poor prints around edge
+ Cracked on feed lines —

1 Poor print —

There are no improvement,

Hoffman Brat in a 7th
Blank 900 lbs
showed very smooth
bright spot -
He broke it at spot
found piece of flint
175/1000 dia —



The Ball Mill
using flints - only
iron / ivory & steel
Balls could be used
Hoffman has sample -

ground floor

719 Baked Blanks

339 341 341 1000 lbs

193-186 182-205 194-186
178 207 177 208 188 195

7 Coolant 2 low 7 high 8 Coat
1200 lbs pressure

3 Transform OK 3

Thickness after transform
195-223 190-230 216-217
198 232 214 202 206 222

Primary Regs
1 Paper punch
2 1/4 Cracked insulation

1200 lbs do Work
Used 1000,

All good surface
No RO

719 Baked Blanks
4 Blanks Req Schedule 1000 lbs
Using Scraper To force more of Cubes
to Edges —

Wt 307 307 306 265

Transfd 4 Blanks Req each
free 4 O-Rs 4

Thickness after transfg —

201 — 203	203 - 208
198 206	197 203
201 - 201	180 - 185
211 190	180 175

Print Req Schedule 1 OR
3 per print
deduct fill —
LUCC Calipers Clean

from ground

419 – Baked – Required count only
500 Lbs –
360 grams –

Thickness 220 200 200 220
210 220 220 198

205 237
220 235

3 transfer all free – 1 Discard pinch dust

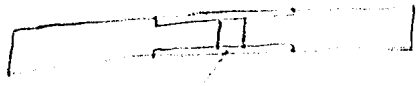
Drawing 3 paper pencil scale
full at Edge –
Think 500 is better than 1000

Impression without blanket
reduced to 300 Lbs transfer
500 & print 1000 –

719—
800 lbs — Double Transfer
one side pull out,
other side big left
3" long 1" wide seal —
Not answered on this
Blank of one Expt is
a Criterion —

Promising

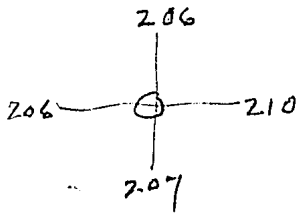
719 — 1000 lbs blank pressure



Dia before Transfer
9.985

.010 Recess

after 10.019



34/1000

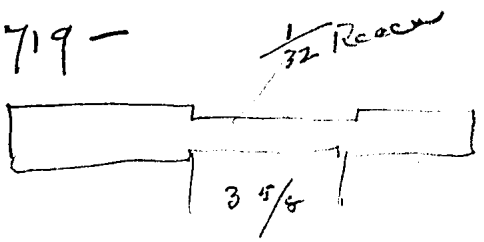
free release

OK

Printing - filled on Music
Cracked on margin about
quite fill — label not
quite filled but more
deep at mould of label
when on mould —

10/1000 Recess helps to
flow & add pressure to Edge

719 –



Impression Fairly Good – 1 OK Print, 1 poor about face
Cracks Lubricant
Red & Cracked Edges Fake Alloy

Too much recess

Use 1/2

as base as
4% would do for
second surfaces I think
if it will transfer +
not cut,

Regular Vulcanah
No Para or Perka

1% 6/4 - all night on glass 1" mat
Condensed - part dissolved in plastic rubbery but viscous it will not melt more, but soft + gluey to touch - brittle in thin cast thicker rubbery for 2% Cracks

2% all night on 1" glass, rubbery, mat very stiff = warm forms flat mat viscous brittle cold this might be OK for 6 months - very brittle -

3% all night - rubbery on warming stiff
Thin comes off as whole, but is very different to handle brittle cold - Not scratch by thumb nail cuts choppy -

4% Rubbery stiff - comes off as whole - stretching while warm - good pours curled shavings when cut - Thin should be OK for 6 months -

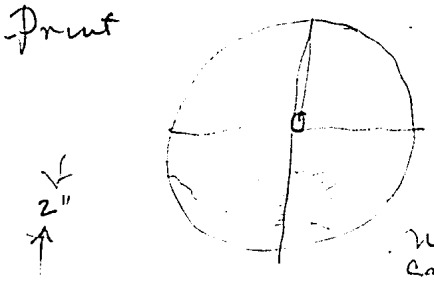
5% Rubber Very stiff - Comes off perfect as very elastic rubber but found chips on cutting with Knife -

5% 6/4 never used to Thick beds,

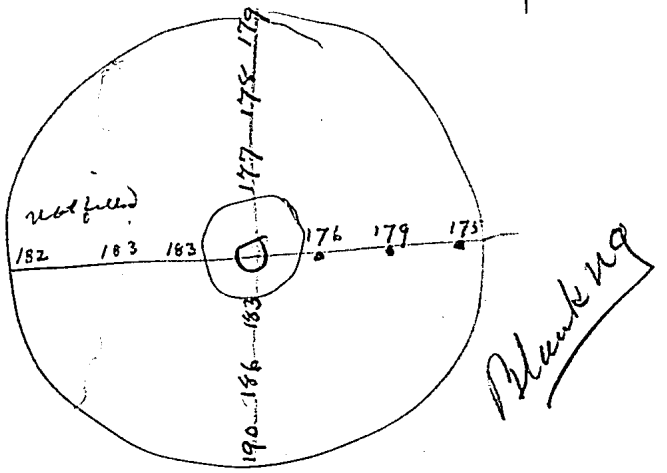
4% as base coat but with glass Reinforcement for Cracks I think - but 1% shapes melting of the Resin -

719- Baked black—

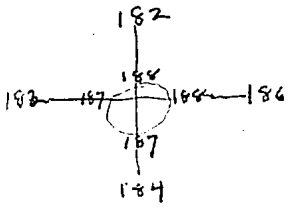
Print

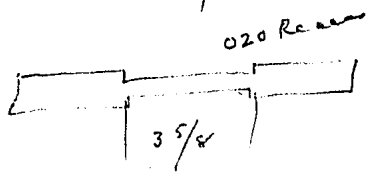


Dawson, Caliper don't take anything as it springs back flush but when printing it springs + can't get Enough pressure on to take expansion

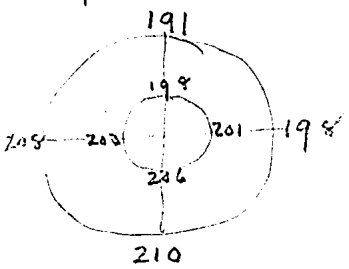


719 Blank Baked 1000 Gs per





after Transfer



Diameter before Transfer
9.985
after 10.043

Transfer Ring Oak 800 Gs high
free release

Print Ring 5a OK on invoice
Light print on margin nearly a
full except Same placement

719 - Baked load 66
Transfers 500 lbs pressure on high

3 Transfers. 3 Cracked & poor surfaces —
No cracks except where no fill & at edge of it.
Place where blank not thick enough ~~Some~~ Of Blanks were even transfers good
Presents. Heat yet nearly filled

1 fine	no RD
2 good	no RD
1 good	faint
2 "	no RD
1 good	faint
2 "	faint

719-Baked 1000 LG —
90 cc Vacuum -

Transfer Requirements —

1 OK fine.
2 didn't fill 1/4" inside edge all around
3 looks like #2 looks good, the bad blank

Prints. 1 Very bad not filled

#2 filled one side perfect other side nearly filled. 1/3 of margin not filled — #3 Bad fill all around

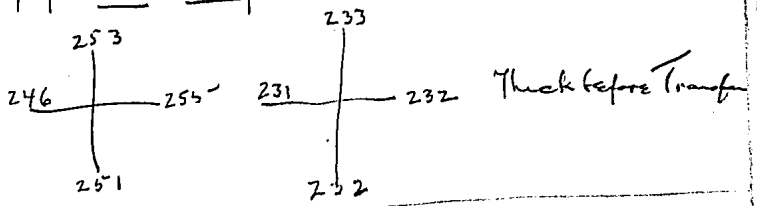
90 cc don't correct a bad blank - it don't flow in apparently if it does, the blank must be very wet and spongy at place

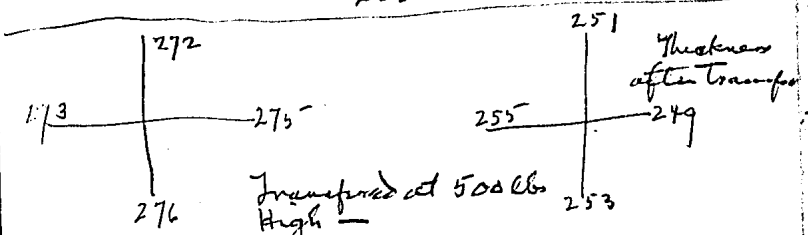
4 good
1 fine
1 Very fine

5 no RO
1 VVV faint

Since 90 cc or 13/1000 on a side will not fill a spongy blank by flowing it looks as if we must get the powder in the blank distributed more even

419- not edged not backed - 1100 lbs.





Ring used in packing - Wt 404 417 grams
632 Van

2 Ok-

Print - Reg 50k - OK on mica faint circles on Margin test OK -

Fair 2
Fair to g 1
good 1

RO 1
faint 2
No RO 1

Not baking is bad -

719 - 1000 lbs not baked

wt 425 - 416 — Ring used in packing Thickness before transfer

242 - 241 237 - 228
239 - 248 241 - 226

after Reg sch

265 - 269 257 - 246
271 - 252 258 249

632 V — 10K 1 did not fill within 1" of edge free radicals

Printing Reg sch OK on music faint cracks on feed line - 1

quad 2 faint! more!

This shows that with proper packing we shall be able to make full prints

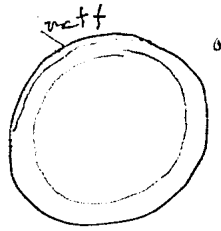
4 of moulds are OK
Everything else OK

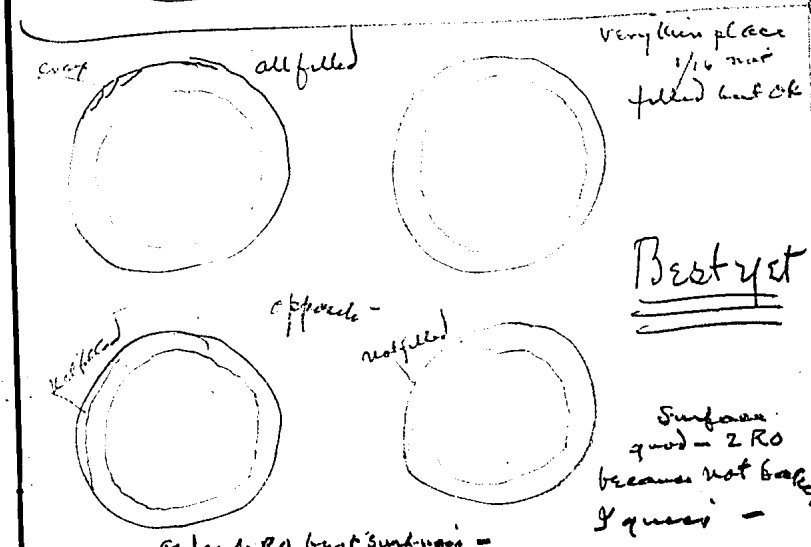
RO probably due to Not packing the segment sealing entirely + the veneer not sticking well on 1/2 Condensed stuff —

4/19 — Not baked, Rung used in packing packed 2 sections — scrapped heads. 1000 lbs pressure used in press

Transferred 800 lbs — 632 V press release 30K

Print. 30K — Best yet.





7/9 - 1000 lbs Baked —

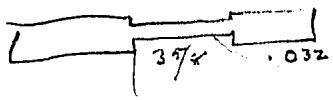
Transferred 7 min Cooled
9 min down
Cooled -

OR 1 — 1 poor fuel around Edges
due to blank one poor fuel in spot

Print. Reg Beh — 3 defect
print around Edges

Poor —

7.19 Baked - 1000 lbs
Transfund Req Rack -



Diameter Before Knurling 9.975
after 10040

Oks 2 —

Printing Oks 2 - Label Red
a burred out mat
filled around Edge

719 - Faked 1000 lbs
Transferred Regash 800 lbs

Center dropped at Local
.020
Dia before T 9975
after 10033
Print
Decided full around 2 dp

Located + checked out

The 5 Samples of Rhenal Resin Varnish with Phenol Resin or Para With 1 2 3 4 & 5% 6/4 % Cried as recorded on previous page to the Varnish in the Same Proportion of each 115 Mlg DEHaven Paraphenol paper Impregnated on small pieces

Note - No 1 Para additions Causes less Condensation & hardening

Note low hardening weak Tears

Corresponds to 2½% Para Note, Stopped below No 5 after charging oven but placed 24 hours more

1% - Not Condensed Except to a point where it & oil mix Gummy like Condensed Linseed oil - Sets softer with Para than without Para causes less condensation, Stays putty like at ord temp - Soft

2% 1

3% 24 hours - softer than 4 like still handkerchief - left on whole - no strength but tears on getting off plate V. brittle cold

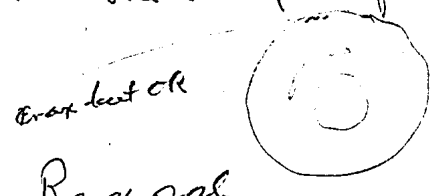
4% 24 hours & then weight on plate pushed on a Whole - More of Ex Thin 5% at Low temp Cuts better - but not strong as 5

5% 24 hours ½" above on glass when put on hot plate & dried. Even puff up or grow Condensation. Very flexible at Low temperature

Think 500 lbs not enough
to weld well required
800 lbs to make good
weld + prevent Run out

7/9 – Baked two Rng plug + varaspar
Req make heats 500 lbs –
All ok on Tinsmith free release

Printing 2 OK
1 Blank didn't fill 2"
from Edge, small cracked –
one large defect in Middle



Crack test OK

Req soak
on retest

Bad packing
acc filled

Printed really
on Edges –

1 good
2 faint q.

1 faint
2 good
1 good
2 faint –

No RO
RO on stud no RO –

faint
faint
RO
no RO

Surfaces

Reg Blanks

Fine	7
Good	38
Loud	40
Fair	55
	140

32% fine+good

719 Blanks

Fine	11
Good	78
Fair	32
	121

73% fine+good

Reg	32% good	73% Run Outs —
719	73% good	36% Run Outs —

Oh!!

35 Df Expts with std procedure
Overall — all Expts different
gauge

272 Run Outs
96 No RO —

73% of all Run Outs
including Fronts + all —

719

16 Expts —

31 Run Outs
55 No RO —

36% Run Outs

719 – Baked — 1000 lbs
Special packed 3 layers
turned top plate —
Wt 529 – 529 470

Transfd Req Sch 800 lbs
632 Van | 3 weeks acc frozen

Ok 2 – 1 2nd [redacted] bad fill

Printed OK1

1 not good fell at Edges, where no fill, it cracks at start of weave
See radial streaks —
These don't look promising

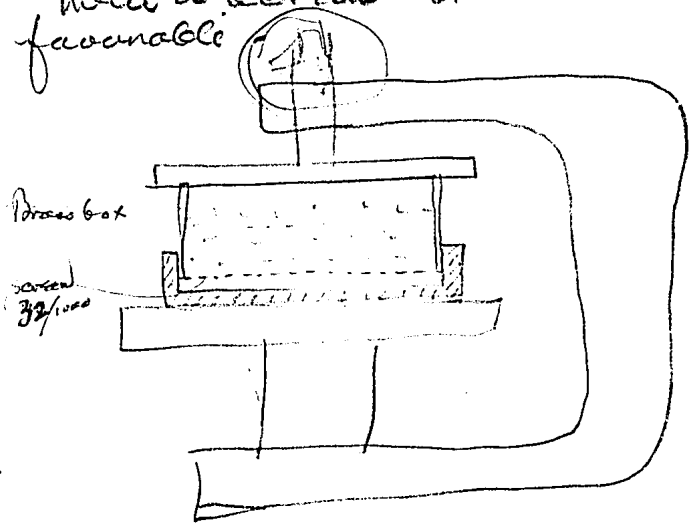
good 5
fair 1 – bad mould

No RO 1
faint 1
RO 2

To thick – Think it squints at Edges + cracks Van —

Think Hammer & Crank bear against at Edges + bear against flange bad pressing off Crank

Just tried experiment filling blank moulds with powder then a screen - it looks very favourable



Used the reg press let the screen box down on bottom of mould then dumped it up 1/16 th + tapped the drum, then another 1/16 + tapped after several full ups - let it down hard + then lifted it out found it ok except around Edges - The drum + ladder being so wide didn't let powder

Come Thru around edges -

The mesh is too fine as it takes
Considerable Tapping on
screen cylinder with piece of
wood to open enough then -
should be 2 or 3 times the area
of screen brot up to Edge as
close as possible

The screen is a little loaded

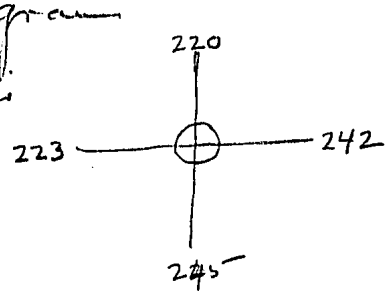
It is original very hard Hoffman
is planning blank it could be
OK if Chunk Except the Edges
which could almost certainly
be had

In practice the screen cylinder
should be given a short twist
between 2 studs a pin being
connected to cylinder
Then the tapping could be effected
after fact, especially with
a Coarser screen
Think about 80/1000 square be OK

powder will load on 1/8" screen when not Tapped

Hoffman Blank weighs 382.5 grain

Calipers



We mark at NO 1 screen -

It looks very good —

Didnt fill lead at 1/2 crimp

No 2 Screened blank

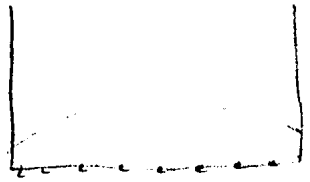
put bottom screen up from Gallon 7/16- & Tapped till filled, it was very hard the edge is fair now but in some places low on the drum is buckled The screen had also been fixed by perforating the corner which ran over on the screen reducing area of edge in open —

I find the powder all full of flakes from the Backhouse — We now screen it then it usually needs clean out the screen box so flakes will not accumulate + Clog the box screen — There is substantially Eliminated

There is one spot that was clogged — Can't say

how long — This may
show up music

We found the powder in
the box also packed very
hard + then



probably because we (apply)
under — In practice the
whole box should represent
then a sound one —
Even then the will occur as
other parts get more movement
+ shock —

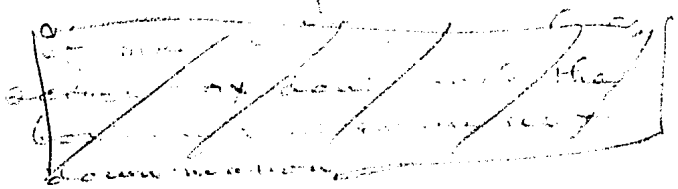
There is no need to bring box
down hard after fill as the
powder is packed sufficiently
compact This is a great

No 2 Adjustment Edge

Comes down from 437.5 / 1000 to 185

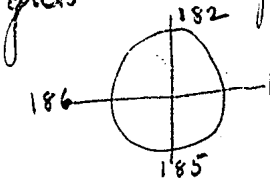
Our process, - Evidently air has been the cause of our trouble in present system —

We will also have less air to come out or be forced in the blank by this method —



Possibly we should have to prevent packing on adjusting Common centers above the bottom centers 1/2" apart 3 or 4 inches up —

No 2 after pressing weights 255 grms +



Adjustment Edge

Nov 7 1913

It is possible that to get good blank surfaces we must left a layer of 200 mesh before screen loading & after — say 1/32 thick

Then will give firm surfaces for Vibrator to feed to —

If surface bad & doesn't feed to cavities in blank hence the natural expansion of Condensed causes a lump or if forced in take too much & leaves a cavity on surface which gives bad surface & cannot be seen by Micro [redacted] —

probably 3 to 1 powder all three 200 mesh best for preliminary & final surfaces

Nov 7 1913

No 1 & 2 Transferred OK Look good —

No 1 — 719 — Transfer Req with 800 lbs — free release

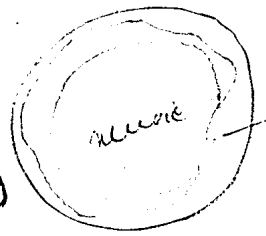
Note — outer edge thin, & not thick enough thin at edge where Rod Req Loading —

Printed Req Rod — Thick Blank

Didn't fill

1 = good — faint RO at end no RO in
2 " "

Not evenly loaded



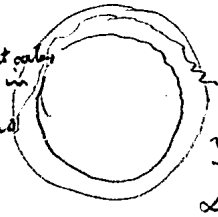
No 2 Transfer same as No 1 free release — in making blank Mould is located & use without pad 1000 lbs

Print Req Rod —

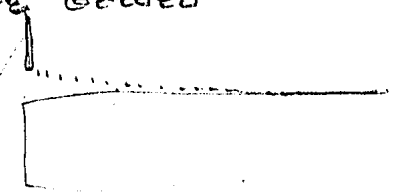
Thin Blank

1 = faint to good — faint outside no RO in
2 " " RO — inside no RO —

Not evenly loaded



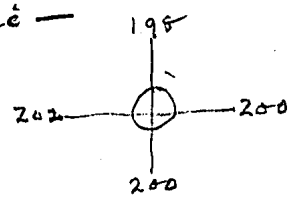
As we can see by experimental on center Edge thick screen should be covered



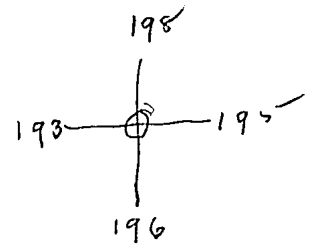
to correct this thickness of Edge or perhaps the bottom or top plates should be convex make a blank then

then an experiment some [illegible].

No 3 Blank screen loaded once — at wt 350 grms



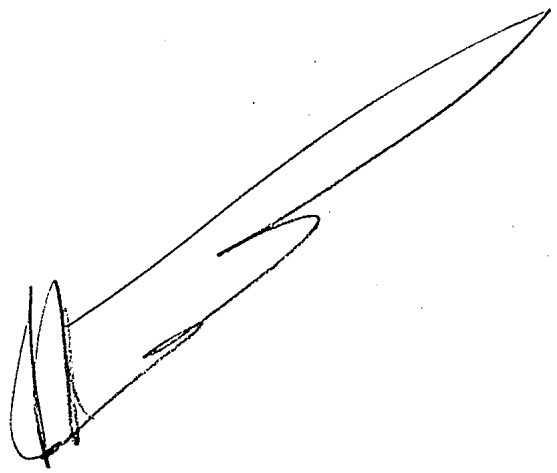
No 4



350 grms

The Harrow is a fracture at 1 cam at + bumper go up + hit top of barrel + throw cover top of ring its the worst yet

We moved it to see if Harrow ridges show



Note!

Rotating mould + reaming in section dont full open but changes weight a gram or so also machining heavy blank 100 grams more

No 5 weighs 444 gram Moved bullet then tapped many times —

This is all filled

Music + 1/8 Beyond

This is Progress

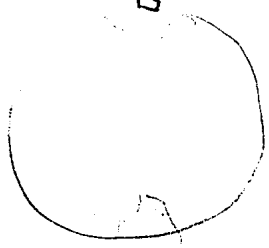
S

1

A06 — WT 305

Harrowed mowed – Harrow put in natural & powder put in in section

1. There's excess of powder which dropped off when harrow lifted out this I removed with a scraper it measured (same beam 1/16 higher (Cream & Powder



On processing these 2 showed up where Harrow pen tracks deepened called had there been no A+B this would have been an appropriately good loam blank

Not quite filled in
Mirror Harrow
Show Cream —
Not very pronounced

Baked

No 7 3 to 1 719 —
Loaded like Crucial blank
Pressed dont seem even
to very thick —
Weight 507 grams —

Print — not filled
music not filled
Not promising

No 8 Print, too thick
Didnt fill on Edges
2 spots volume
music didnt
fill

No 8 — 3½ to 1
Seems to be quite Even
washing spots it
too thick —
Wt 529 grams —

No 89 =

New screen box - 1/16 mesh (5/1)

Rotated mould while topping
to probably loaded too
heavy - reamed

Wt 293

Thicker at Edges -

When put on piston, it
blew 3, or 4 grains right out
of hole showing necessity
of cleaning top recess
pellet closely by Neadly
Moore Thinks rings Lapped
will make another
with More powder -

Scram packed one setting

719 —

350
329
314 } Scram

187

188 — 185 —

185 —

Transfer Ok 600 Ohm fuse

Print Dedut full at Edge
+part of Muscle

PHENOMINON

The marks of the screw plugs
shows all over the record

There is a big Cue

No 10 Same as 9 but
More stuff —
Wt-377 Looks pretty
Even

Printed — Cracked
on 2 edges —

Not filled in
Middle + Edge

A-011 — 719

Loaded Rep like thread plunger dies put on & then violently vibrated —

Lot 446 —

Looks very even

Printed — Not fed in music spots — middle of music not fed — 1

It was roughly vibrated & poorly done

1918

Cream, Potato —

then ring to put more at edge
tried turn top plate clock

Print— full & just
beyond mean

Then sharp watch hour
powder around Edge
approximately —

No 13 –

Screw one dump
~~[illegible]~~ rotated
then press top put on
of it rotated

Blank has one circle
seal & it shows indentations
like a piece of metal

Vol. 355

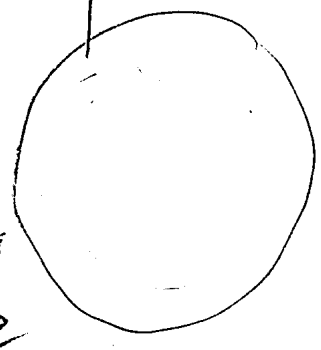
Print – Orient file
Nurse went called &
fire crackers at Edge
of mesa
Not prominent

The 2 blisters
showing red –
& one puffed up
puffed up 20/100 of
more don't show
on print S S
7 1

No 14 longer pins —
No matter how it put on it evenly distributes it but where pins pushed out its higher on one side or wavy — its somewhat irregular surface

Wt 343

Blank No —
Big shiny spot.



Print
filled very good - nearly whole of edge but lots small cracks or gaps

Shows shiny places top of narrows lines —
Not primary

15 =

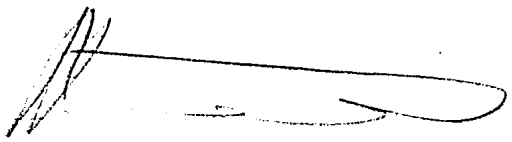
Moore placed powder in Mould. with 2 Scrapers -

Edison then hammered ring horizontally - for several minutes —

It was not level probably 1/32 to 1/16 out level -

Blank looked shiny all around Edge which is unlike all the others yet it was low at Edge when powder comes in

Print - Mould filled but part Edge not filled - 2 unfilled Spots on Record



Note this—

Weight. 362

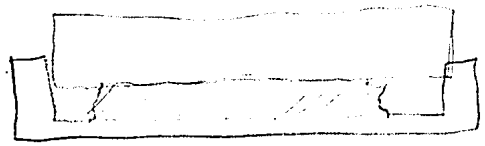
A new top ring with top ring

Caliper 255

No 16 W

Is a rough Expt—

Reg mould had a ring about 5/8 wall placed inside reg ring + then smaller ring packed with powder— then the smaller ring pulled out



then top mould plastic put on + pressed— Removed

Blank came out perfect shape but gray + light pressed Except 6" center which was black + shiny

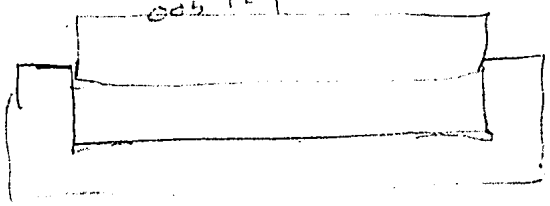
Wt worst result

No 14

Packed by ...

bottom & Top .005" taper

.005" Taper 1" beveled blank



to get edges thicker .005"
is finished - Load round —
Wt of blank 360.
Calipers, 219 - 195 215

No - 12 Cards

Shiny Opal +
grey plastic

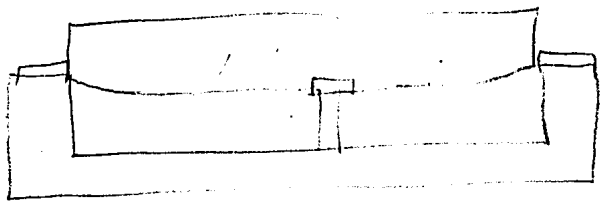
Print — Not (like)
Music filled

NO 18 – Blank
shows black shiny
all around Edges
but gray inside –
Thunk 1/4 inch is too
much – probably
3/16 or 5/32 will do it

Print Good

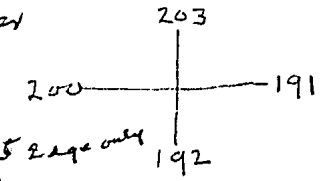
Rolled, OK, Could.
but few Cracks at Extreme
Edge – too much stuff
at Edges – Cracks are
opp where there is lack of
fill 1/16 at Edge

18 – First Blood

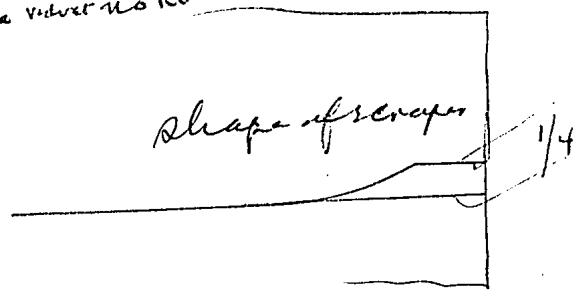


Scraper to put more on
Edges – Edison tapped
ring with hammer to
help weave get last
part of Calibrator on
Wt 355

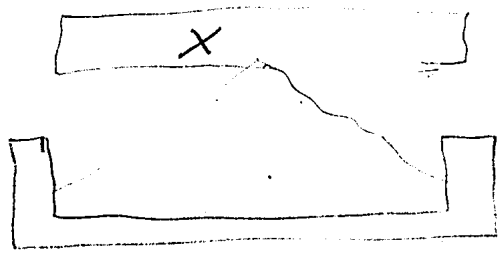
Caliper



Record
1 good VVV fourth Edge only
2 fine rivers no RO



19-



Squeezed this down with sieve plate till X just entered mould ring - then put in press & brought up to contact but for 3 min I saw 1000 lbs It was like the Rang Expt - Only 6" of Cinder used Slurry - Edge Crumbly

VG Dont Clean even

Not,

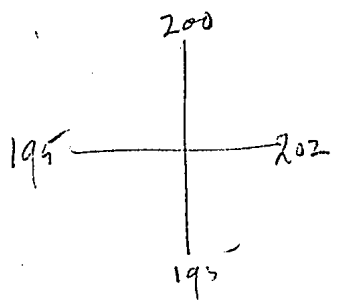
No 20 – poured on & scraped off – Put in press & brought up only to Contact 3 min – took out checked some further pressure – etc as very Even + Light gray all over –

We now take it

Nat. filled. mucoic practically filled

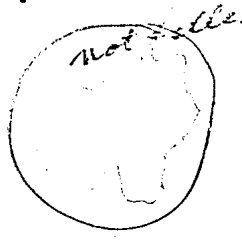
Pretty good Conclusion

21 Expanding Ring 1/16 metal
packed by [illegible]
[illegible] 1000 —
3 Contact [illegible]



Looks fair . . . [illegible]

Print [illegible]

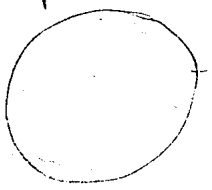


Printed Record test.

1 good vvv ~~2 bad~~ faint.
2 good rvv faint ~~& frequently~~
fine record –

22

Duplicate of 18



dark ring all around edge showing that the 1/4 inch Xerox powder does the big – Edison tapped it a few times twice calibrating Xerox reader feeding – 2 Tappings – next more than 1/2 day time each

OK

1/8 at edge one side only 1/2 way round –
~~Above~~ 1/3 on other side Comet

23

1/8 inch 719 powder in bottom, 1/8" 719 at top, in between is Req Cresol powder

24

Req pkg with makkw- 719

only one pkg — 3 contacts
5, act wrap —

This will see what is min
Contact meet to

No good

Rollen

Record Test

1 fair to good
Loudest at Edge Lower on middle
Three less at Inside — VRV faint

2 = good —

RO 1st point faint middle
no RO Center

and same hardly heard
surface —

25

Drop of 14

Worm tapped 1

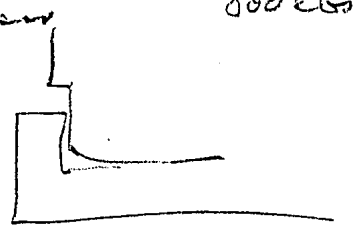
Shiny all around Edge
on one side, not very
noticeable on other
side —

OK filled all over
except 2nd 1/16 w. dc at
one edge Comply OR -

26 – 1/8 IF

Scraper

800 Lbs Tractor



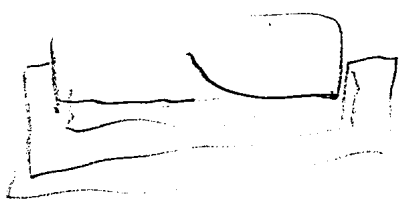
Didn't fill full
not as good as the 1/4"
as up to 18"

1 good straight edge RD with edge worn inside
3" face at center "

Deep – not quite filled
in some places runs to
Municipal

27.

Moores turned up packer



1 out fan Cairn from Local grad RD work acc Hours

2 - Double run out allway in surface for extra Cairn from Local

out true Expts not good
reduce Co and platten to
out —

Platten out .015

Duplicates of No 18.

Shiny ½" to 1" all around shape of plaunt —

No 1

Mould 8	1 good		no RD
Mould 49	2 good		VVV faint

No 2

Mould 3	1 good		faint no RD
out .005 " 4	good		

No 3

out .030 Mould	15	1 good	faint
out .030	67	2 good	V'V faint

Dup of 14 Continued

No 4

post 015
out 030 Moved 8 1 quad faint
" 49 2 " "

49 lines available w moved.

out 10/inch

No 5

out 010 Moved 16 1 quad Outer edge RO
out 015 " 67 2 quad No RO Mid & Lower VVV faint

67 on Master - Does show Record as OK

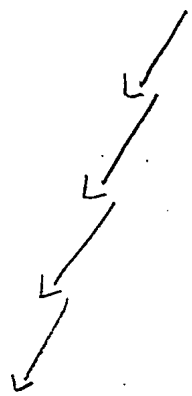
No 6

out 1/32 Moved 3 1 quad No RO
out 1/32 " 4 2 quad VVV faint

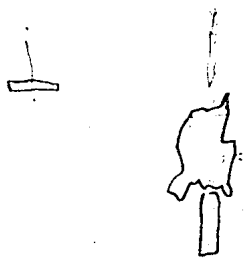
50 grms

Illum 200

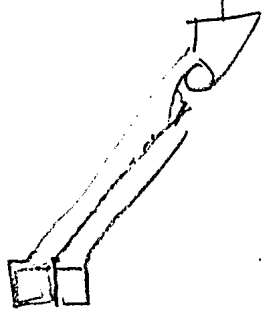
1st pass	18.9	
2	" 2.1	
3	" .4	
	22,1	



Thus no better than



Screen Exit



Slots .006 wide Brass

50 grams of ferric ground 7/9 volume precededby load 1/15 @ 47% passing 200 mesh

1st Run got	20.5	grms	-12½	Illum 200	
2	"	8.2	"	4.8	"
3	"	3.3	"	1.6	"
4		2.3	"	1.1	"
5		1.2	"	0.6	"
		35,5		20,6	

under Micro only 1 & 2 are good. but think 1st pass to Cent only & use - or 40%

Chronometer tested 6

Records Dup of 18

719 powder heavy loading at Edge near top marked & Revolving operation

Brot up in events 130 False 1 Loaded —

Here use CO_2 anhydride 41 deg false below Zero 2 hours 6.

Vehicle 41 deg below Zero in Center at Long range Loads at Edges say 60 deg

None were smoked again OK - Surface + RO seemed little harder —

Dup of 18 — 719 fine grained 47% Nitro 200 mesh —

6 Blanks —

Transfer Reg 7 Central 3 Rad 7 high 800 lbs — 632 Var 1560 Lat

All free release

1 6 Blank showed rad around Center — not uniform — all OK in transferring

Printed = 5 ok — 1 bad blank dulent fill in printing Cracked at 1st Line music Lines not filled

all printed on 15 + 67.

1 — 15 1 Load outer four middle good Label RO. Edge - less center no RO Label

67 2 - good all over vvvv faint

2 — 15 = four to good in the huddle none at Label RO Edge faint

67. defect at Edge - good, Center good Label good VV faint RO —

3 — 15 - good — no RO

67 fine — no RO

4 — 15 good - faint

67 good V faint

5 15 - good VV faint

~~8~~

67 - good Bad RO on stand. Center Lab No RO

5 no Record that not filled ahead or marks at Edge Mis

15 - good VVV faint

67 good No RO

This process blanks OK to up to moulds now

Pressed record RO on short Schedule Mean long Schedule

719 - new pkg Dept 18

Transfer 2 Central 1 Low

5 high 800 lbs -

3 transfer records - short schedule

Print ~~[redacted]~~ short Schedule also over tracked blank

Record 67 1 side faint to good RO faint

15 2 " good

~~[redacted]~~ Printed long schedule Music,

1 faint to good, no RO faint -

2 good -

Print, 2 short schedule

Recorded 15 1 good faint RO faint no RO Middle faint Edge No RO Middle

" 67 2 fine -

67 Print 3rd short sch - VVV faint

15 1 good - faint

good

Short schedule –

15 1- fair -
67 2 fine

Edge RO – Mid+End VVV/
VVVV faint,

11-12-13.

Dup of 18 719 rowled

Transfer on short schedule - 2 min
Contact 1 min Low 5 min high 900 lbs
6 Transfer 4 OK 2 hr small birds - free release

Prints 15" OK IIII Two cracked Edge this has 3/16 width of seed edge, this no abnormal amount of seed - this has some escalation to Cracks: our old enemy

1	15" faint to good 67 - good	no RO faint
	15" good 67 fine	no RO no RO
	15" good 67 fine	no RO no RO
	15" good 67 fine	no RO VVVV faint
	15" good 67 good	no RO VVVV faint
	15" good 67 fine	no RO no RO

RAM		
$7\frac{1}{2}$"	10"	12"
LBS. PRESSURE.		
500	300	200
600	350	250
700	400	300
800	450	325
900	500	350
1000	550	400
1100	625	425
1200	675	475
1300	725	525
1400	800	550
1500	850	600
1600	900	650
1700	950	675
1800	1025	700
2600	1450	1000
2700	1500	1050
2800	1575	1100
2900	1625	1125
3000	1675	1175
3100	1750	1200
3200	1800	1250
3300	1850	1300
3400	1900	1322

STEAM	
GAUGE PRESSURE LBS. PER. SQ. IN.	TEMPERATURE FAHRENHEIT.
30	273.87
40	286.54
45	292.2
50	297.46
55	302.42
60	307.10
65	311.54
70	318.77
75	319.80
80	323.60
85	327.36
90	330.92
95	334.35
100	337.66
105	340.8
110	344.
115	347.
120	349.8
125	352.6
130	355.3

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228

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